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Hewers of...chips and code?

If you can recall high school history you may vaguely remember a certain quote from one of the fathers of Confederation — Sir

Samuel L. Wilby. He uttered the memorable: "The time has arrived when we are to decide whether we will simply be hewers of wood and drawers of water..." Indeed, those words are needed now and then by pundits wishing to emphasize the dangers of being a natural resource-based economy.

Well, if one considers the essence of this country's populace, a whole new issue is emerging. Today, government and industry alike are recognizing the need to further develop a highly trained, competitive workforce on a national level. We're seeing the transition to the "knowledge worker" and this trend will only accelerate as information technology — with its limitless pace of advancement — increases, to

University of Waterloo in Waterloo, Ont.

That's why *Canadian Computer Wholesaler* wants to recognize technically significant Canadians with a new *Technical Excellence Award*. The idea is to draw attention to Canadians who are making noteworthy technological contributions both here and abroad. They could be developing software or hardware, or even implementing or integrating technology in unique and innovative ways.

If you know of a Canadian who deserves recognition for a contribution to the beneficial advancement of technology, please let us know. You can fax us the nomination form found on page 43, or fill out the form on our Web site, at <http://ccw.com>. Or drop us an e-mail at ccw@topus.com. Nominations close May 15, and we'll publish profiles of the winners in a special July issue of CCFW.

Meanwhile, this issue, we're looking at some of the latest technologies to impact you and your customers. Our *Lab Test* led this issue by Steve Helms, reviews DVD drives, highlighting the vast differences in capability and capacity from one offering to the next. (Please see "DVD Drives — Take care, they're not all created equal," page 44.) Don't miss the feature on Web Authoring Software, in which Scott Campbell reviews seven leading Web development tools by feature and focus market. (Please see "Web Authoring: Get the Apple Pie for the Job" starting on page 14.) And Associate Editor Jeff Evans updates us on the latest computers in the printer market in "Printer Market Poised For Better Jobs, Cheaper Users," page 34.

Looking just around the corner, Alan Zeman and Orson Bennett both offer previews of Microsoft's impending Windows 98 operating system (please see "Windows 98: A step up, but not necessarily on," page 52, and "New Video Options For Windows NT3.5," page 38).

Please note: because your businesses are based upon technology, we're striving to provide CCFW's readers with more in-depth technical information in many of the magazine's articles. We'd love to hear your comments and suggestions. —B

Greer Carstensen
Editor

Canadian Computer Wholesaler

Publisher	David Kates
Associate Publishers	Judy Franco Brian Singh/Kelvin Greer Carstensen greer@ccw.com
Editor	Jeff Evans jeff@topus.com
Associate Editor	Steve Helms helms@topus.com
Lab Test	Steve Helms helms@topus.com
Contributing Writers	Gregory Bennett Douglas Gray Stephen Helms Paul Liem Michelle McLennan David Tanaka Alan Zeman Sherry Ho
Production Staff	Karen Hanson Joan Keller James Kilgallon james@topus.com Frank Horden frank@topus.com Wang Ng wang@topus.com
Regional Sales Manager	James Kilgallon james@topus.com
Account Managers	Frank Horden frank@topus.com
Account Managers	Wang Ng wang@topus.com
Controller/Accounting	Linda Kunguany Funda Ann Scott Koon
Executive	Ken Jensen Egon Lujan/Chris Li/Ding

Canadian Computer Wholesaler
is published 12 times a year by
Canadian Computer Paper Inc.

Toronto Office

Suite 200, 70 Adelaide Ave.
Toronto, Ont. Canada M5H 1A9
Tel: (416) 513-4000
Fax: (416) 513-5579

Vancouver Office

Suite 403-275 C. 47th St.
Vancouver, B.C. Canada V6J 4G9
Tel: (604) 681-2044
Fax: (604) 681-2045

Calgary Office

Unit 100, 2100-15th St.
Calgary, AB T2M 1K6
Tel: (403) 244-3140
Fax: (403) 244-3140

Internet: E-mail address: ccw@topus.com

Web Site: <http://ccw.com>

Subscription applications and change of address notices must be made in writing to the office of the above address.

Print subscription in printed materials, \$10 per year for non-subscriber rate.

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Printed in Canada
Printing plant at Vancouver, B.C.
07432200

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Don't count Netscape out!

In order to survive in this business world today, we have to take some chances that may seem obscure. Netscape is currently taking some chances by making the browser free and providing source code to developers that I feel will see all them in the long run.

Sometimes good ideas come in the Internet world from people who are "lamer" programmers. Don't count Netscape out yet! They haven't reached their current potential by making dumb gas as moves. This current move will definitely pay off.

Andy Slaty

Senior, Deloitte Computer Consulting and Data
Management, Del. andy@deloitte.com

Timely information on newsletters

I just wanted to congratulate Cathy Cowen for her article in CCW/Bulletin about newsletters.

I was just thinking about doing one such publication for our business and your information was very appropriate. If you have other sources of information, please let me know where I could find it.

Dana Skidmore

corporate sales representative, accounting solutions
Affirm Logic, Senior Proj. Mgr.,
aj@affirm-logic.com

Edna's Note: Cathy Cowen, of Stamford, Canada also recommends these books for more on newsletter writing: "Copywriters Handbook" by Richard May and "Newsletter Guide to PDF" by M. Levine.

Kudos to CCW and the ThinkPad!

I received both a letter "congratulating" me a month ago since reading yours for the last six months. I find myself reading the others less. In any case, congrats and say well-wishes to the CCW folks the reviewer and the publisher informed and current as to the latest products and trends in computer technology. It has been a valuable tool in my hardware and software purchase decisions by giving me the latest information from a Canadian perspective.

I ordered...the purchase by my school board of 25 IBM ThinkPad 380S notebooks. After six months of use, I agree fully with your statement in CCW February that "various models of ThinkPad...are still the standard for other notebook PCs to beat."

I have yet to see a better notebook for running the wide array of educational applications being run in today's Ontario schools.

Peter Murphy

Curriculum coordinator — computers
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Letters To The Editor

We welcome your letters on industry issues and concerns, as well as your comments on our magazine. We reserve the right to edit your contributions for length and clarity.

Please write to The Editor, via e-mail at ccw@ccw.ca, or fax (800) 263-7892.

Xerox Corp. shares Windows 95 for NT operating system

An insider at Xerox Corp. said employees are being trained for installing Windows 95 on corporate systems with unsupported processors. The company standardized on Windows NT as its desktop operating system last spring.

An internal Xerox document explains that Windows 95 is not as robust as Windows NT in running multiple file-server applications. It goes on to read: "Ultimately we believe that it is Microsoft's strategic direction to converge their 32-bit operating system solutions to Windows NT."

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Lower than expected demand to hit Intel's bottom line

(NDI) — Intel Corp. said first-quarter revenues would slip 10 per cent from its fourth-quarter 1997 figure of US\$36.5 billion. Intel officials said first-quarter results would be impacted by weak interim demand from original equipment manufacturers (OEMs) that use Intel processors.

Intel also said its recent acquisition of Chips and Technologies Inc. is expected to impact earnings in the form of a one-time non-deductible charge in the first quarter of approximately US\$165 million, or US\$0.09 per share. The write-off will include in-process research and development, officials said.

Intel's year ago first-quarter net revenues of US\$6.45 billion on net earnings of US\$1.98 billion, or US\$1.10 a share after a stock split.

Apple discontinues development of Newton OS

Apple Computer Inc. says it will discontinue further development of the Newton operating system and Newton OS-based products, including the MessagePad 2100 and iMac 300.

"This decision is consistent with our strategy to focus all of our software development resources on extending the Macintosh operating system," said Steve Jobs, Apple's interim CEO, in a statement. "To realize our ambitious plans we must focus all of our efforts in one direction." Apple says it will introduce Mac OS based mobile products in 1999.

In Canada, EMI Data Systems Ltd. has purchased Apple Canada's remaining Newton inventory. The company won't release the number of units, but expects supply to last just a couple of months.



One-fourth of on-line job seekers get offers, says Monster Board

(NDI) — According to a new survey billed as the first to provide statistical results on on-line job searches, The Monster Board (<http://www.monster.com>) has found that 25 per cent of job seekers on its Web site get at least one job offer, and those receiving offers get an average of three offers. In addition, the numbers of job seekers and recruiters visiting the site has just about tripled over the past year, if the month of January is a good indication.

The Monster Board received 3.2 million visits during the month of January 1998. Sam Zarey, vice-president of product development and marketing, cited two factors as contributing to the high success rate of Monster Board-based job searches: the growing "diversity" of job seekers on the site, and the fact that 64 per cent of those job seekers are "passive" job seekers who are not actively looking for a job.



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- Intel 430 TX chipset supports Ultra DMA/33 IDE protocol, ACPI
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3Com introduces Palm III connected organizer

Two years after the initial introduction of its Pilot handheld device, 3Com Canada has announced the third generation in its palm computing line—the Palm III. The new product incorporates a host of incremental improvements: large and small, plus some entirely new features. Among the most significant, informed "boasting" capability with other Palm III organizers, the new Palm OS 3.0, larger standard memory (2MB RAM and 2MB flash), a "Star Trek Communicator" style flip-up lid, an improved ergonomic design to the case, improved font management, a new Applications Launcher, file linking, improved third-party applications installation, and enhanced HotSync technology.

The Palm III will have a suggested retail price of \$549—the former price of the Palm Pilot 5000 model. Prior versions of the Pilot line will continue to be offered, at reduced prices (\$429 for the PalmPilot Professional Edition, and \$279 for the PalmPilot Personal Edition). An upgrade offer of \$105 off is available to Canadian Pilot owners who wish to move to the new version. There is also a clip-on reader available to allow for easy access to e-mail and other telecom services.

As Nick Tull, director, Canadian sales for the Client Access Business Unit of 3Com Canada stated: "With the Palm III organizer, our goal was to deliver a product that would delight our customers by building on the con-

venience, form factor, instant response, connectivity and value that made the Palm Pilot products the best-selling handheld devices worldwide."

The Palm III is sold with a Home Pack CD-ROM, with business applications and utilities, including a Web channel manager, a drawing program, and games, valued at \$29.

According to a Transpore survey, the Palm Pilot dominates the global handheld computing market with a 66 per cent share, compared to 11 per cent for the HP CE handheld and 5.1 per cent for the Apple MessagePad. In Canada, over 843,000 Pilots had been sold by the end of 1997, representing 63.3 per cent of Canadian handheld sales. And 100,000 additional units may be sold in '98, according to Evans Research projections.

In addition to the new features and software included by 3Com, the Pilot platform's strongest feature are more than 5,000 registered third-party developers, including over 600 in Canada.

From users' point of view, the combination of the Pilot's growing popularity and a host of value-add opportunities enabled by third-party products has further showed the interest of the handheld computing channel towards the 3Com product, and away from its competitors.

3Com acquired the Pilot technology by purchasing a small, pioneering company called Palm Computing a few years ago. ■



Contact. The Editor

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NEWS

We welcome your ideas regarding news and feature topics for Canadian Computer Wholesale. Feel free to contact the editor directly with your suggestions.

TEST LABS

We'd like to have your feedback on the suggestions on our Test Lab review section.

Please write:

The Editor, Canadian Computer Wholesale
200, 28 Atlantic Ave., Toronto, Ontario, M5R 1J8
Tel: (416) 598-6574
E-mail: ccs@ccw.on.ca

Editor Grace Cappellari

Cell: (416) 753-7600
Fax: (416) 598-7653 E-mail: gcapellari@ccw.on.ca
Advertising Editor: Joe Tullio
Cell: (416) 525-5141
Fax: (416) 598-6560 E-mail: jettullio@ccw.on.ca

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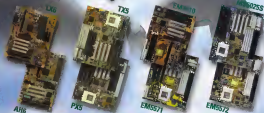
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Survey says nearly half of Canadians condone software piracy

(NB) — A nationwide 43 per cent of Canadians said that pirating software for personal use is an acceptable practice, according to a survey released by the Canadian Alliance Against Software Theft (CAAST).

The telephone survey, conducted among 604 randomly selected employed adult residents across Canada, found that only 30 per cent of respondents would report someone for unlawfully copying software. Yet, in contrast, 30 per cent of Canadians recognize software piracy has a negative impact on the country's economy and jobs.

Norm Dubois, Microsoft Canada's anti-piracy marketing manager, and a CAAST spokesperson, said Canada's rate of software piracy is much higher than that in the U.S. "The latest figures, from 1996, show that the piracy rate in Canada is 42 per cent, compared to 37 per cent in the U.S.," he said.

Distributor Tenex Data signs four key manufacturers

Tenex Data has signed distribution agreements with four key storage manufacturers to enhance its offerings in the areas of disk, tape, optical, CD-ROM, RAID, and storage management software. Meanwhile, the company has widened its scope to also include PC control and recovery upgrades.

The manufacturers signed on by Tenex are Legato Systems Inc. of Palo Alto, Calif., for the NetWorker line of storage management software solutions, Storage Dimensions of Milpitas, Calif., for the SuperFrost 3000 (SGR) Ultra and RAIDPro products, Plethora IDE of Eden Prairie, Minn., for the M Series magnetic-optical libraries and D Series compact disc libraries, and Sample Technology Canada Ltd. of Mississauga, Ont., for Sample's entire range of PC-based recovery products.



"Canada's economy lost over \$200 million to software piracy in 1996. Given the high cost to our society's economy and job market, it is disturbing to find that stealing a chocolate bar, lying on a resume and taking office supplies, are considered more serious crimes than copying software," said Michael Elwan, lead counsel for CAAST.

Dubois suspects it is the relative newness of computers in the general social climate is a factor in causing this attitude. He added that software pirates are mostly either new users or young users who did little understand the potential consequences of piracy.

The survey results, said to be accurate to within plus or minus four per cent, also indicate that when Canadians are educated on the gravity of software piracy and the negative impact it has on our economy, 80 per cent are unlikely to copy software in the future. "CAAST views this survey as a call to action to further educate the public on the seriousness of software piracy," said Dubois.

"I've got to get on a bigger box and talk leader to make sure we're understood," Dubois stressed. The study was conducted by Toronto-based Decima Research. Among the respondents, 70 per cent were computer users, either at work or at home.

Dubois added "CAAST believes in the importance of reducing the level of software piracy in Canada and we will continue to encourage individuals to call and report suspected software piracy on CAAST's anti-piracy hotline, 1-800-263-4700. We will also continue to educate consumers and retailers about the risks associated with buying and selling pirated software."

Individuals or businesses caught with pirated software are exposed to civil and criminal proceedings. Criminal penalties for copyright infringement include fines up to \$1 million and jail terms up to five years, or both.



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Microsoft files copyright lawsuits against two Vancouver resellers

Microsoft Corp. says it filed lawsuits on Feb. 27 against two Vancouver-area companies, alleging copyright infringement from unlicensed software installation and distribution of infringing products.

Attention Computer of Richmond, B.C., and United Computers Ltd. of Vancouver, B.C., were named in the suits.

Wynne Powell, chief operating officer for London Drugs in Richmond, B.C., applauds Microsoft's efforts against piracy. "The software producers, other resellers including ourselves, and parties fully understand how when resellers don't play by the rules," he said in a statement.

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Ingram preps for huge new facility

Ingram Micro will be the last tenant of a \$90,000-square-foot industrial complex in Mississauga, Ont., and developer Orlando Corp.

Construction will begin in May, and the building is slated for occupancy by October, 1999.



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Ingram Micro plans to move its existing operations and nearly 900 Toronto-area employees to a \$20,000-square-foot industrial facility, and more than half of the 480,000-square-foot, 12-story office tower.

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Compaq announces networking program

To improve the availability of its Maroon communications products and Netelligent networking products in Canada, Compaq Canada Inc. has announced the creation of an authorized reseller and VAR program targeted at the professional communications and networking markets.

The new program will require qualified VARs or resellers to make specific commitments to technical and sales training, marketing support and sales volume targets. It further indicates a deliberate evolution of Compaq away from "PC box seller" to "enterprise IT solution provider," as it moves quickly into head-to-head competition with IBM for the enterprise market.

Netcom offers Internet service guarantees

In an Internet Service Provider market often characterized by financial instability and technical problems, Netcom Canada has tended to be at the top end of the spectrum in terms of its ability to supply reliable Internet access for individual users and corporate customers. Unlike many other ISPs, Netcom Canada has deliberately built a technical infrastructure based on standardized, high-end networking products (overwhelmingly Sun, Cisco and 3Com components, which are identical in its installations from coast to coast).

According to Iliac Close, president of Netcom Canada, the company intends to back up its promise of high availability with a service level guarantee. Netcom now guarantees 99.5 per cent availability of its services for all business customers. According to Close, "Netcom Canada is willing to step up to the plate to provide a level of service that truly meets the customer's needs in every manner. We make customer satisfaction our number one priority and these guarantees are just another way of proving it."

The bottom line is that upon verifying that a customer's service has fallen below 99.5 per cent availability in a given month, Netcom will credit the customer 25 per cent of the monthly Internet service fee. For some companies, this can amount to a very large sum.

Discreet Logic acquires MGI

(NB) — Discreet Logic Inc. and Richmond Hill, Ont.-based MGI Software Inc. have announced a merger that will turn MGI into a division of Discreet Logic. The deal will give Discreet Logic, (which built its business on software for high-powered workstations), a presence in the consumer market.

Both companies are in the video software business. Three-year-old MGI sells PhotoSuite photo-editing software and the VideoMate package for video publishing. Discreet Logic's imaging software is used to create visual effects and in video editing and production. The deal is worth about \$133 million.

ATI's DVD software free until April 15

Until April 15, ATI Technologies Inc. will ship free DVD software to system integrators and VARs that order

ATI's AGP 3X version of board products that use ATI's Rage Pro Turbo chip, including XPERT®Play AGP, XPERT®Wave AGP, XPERT®XL AGP and the All-In-Wonder Pro AGP.

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Cisco takes to Web sales in a **BIG WAY**

By Michele McLean

Cisco Systems Canada Co. predicts it will be selling more than 50 per cent of its products over the Internet by year-end. That may be good news for this network hardware giant, but some resellers aren't so sure.

"We expect by the end of this year over half of our business worldwide — and, some day, the majority of our business — will be done electronically over the Internet," said Rob Lloyd, general manager of Cisco Systems Canada Co. "We're very focused on making this happen because it is the business that we're in and we think, by being a leader in the area, it sets a good example of what can be done over the Internet in a secure fashion."

But Cisco reseller David Pang, president of Ocean Systems in Whitby, Ont., said that allowing customers to buy over the Internet is a real concern for him. "As a reseller, I don't know what they're trying to do," he said of Cisco. "It looks like a threat to me and I don't feel good about it." He said Cisco hasn't talked with him about its Internet sales model, but added that he hasn't been offered so far. "With our customers, it hasn't become an issue yet," he said. "But from a long-term perspective, what's there to stop customers from going that [paying over the Internet]?"

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NSTL PC Digest, September 1997

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PC Portables, November 1997

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Sharon Reinhardt, customer service representative for Cisco Systems Canada Co. said resellers have no cause for concern. Since Cisco got its on-line Internet e-commerce site (<http://shop.cisco.com>) in place in August 1996, the claims to have heard only positive feedback from resellers. "Resellers don't have to worry," she said. "No one seems concerned in my opinion and I talk with resellers every day."

She explained Internet purchasing is nearly for resellers and distributors, so they can see the company's pricing, lead times on their orders and invoices. Besides, not just anyone can buy from the Cisco Web site, she said. Before making a purchase, a company must be registered with Cisco and that means they must have previously bought a Cisco product. "End-users buy on our Web site, but not first-time [business]," she said. "There are certain rules and steps that have a direct relationship with Cisco. These are customers who perhaps have enough technical people on board that they don't need to go through a reseller."

These customers would have come directly to Cisco anyway, Reinhardt added. "Most customers that are going to buy direct are going to be the larger-end customers and they're going to demand the higher level of service. Resellers can provide [service] for the small to medium-sized end-users. And we very much want them to go that way — through resellers. I don't know why resellers are concerned, because we're pushing the business to reach back through the channel now — the small/medium business especially. The large accounts wouldn't have bought from them in the first place. They always would have come direct."

Reinhardt added that if a customer calls her, she suggests they go through a reseller. "We're trying to focus the small/medium businesses through the resellers," Reinhardt said. "That's better for them because they get the support. They are there to offer that support."

Lloyd and Reinhardt say resellers are reaping benefits from Cisco's on-line Internet product sales site. "As soon as the Web site was available, all the resellers and distributors were up on it right away because it's better for them to place an order," said Reinhardt.

Resellers become more educated because they're setting direct accounts with Cisco and bypassing the distributor, Reinhardt said. And Lloyd claims Cisco has 100 per cent order accuracy for orders placed through the Internet. "When the order is configured using the configuration agent and proof using the pricing agent, you can be assured it's been processed correctly and

priced correctly," he said. With these agents in place, the customer can't make a mistake. Lloyd added. The status of an order can also be checked over the Internet, he said.

And Cisco is saving money — \$250 million in Canada last year. "By doing business over the Internet we are providing our employees with open access to information that otherwise would have resulted in having more people on call centres, more people in support roles and having a greater number of people doing non-productive work," said Lloyd. "It has improved productivity. We're focusing on higher value relationships with our customers, not on the transaction relationship, but on the network design and the higher value issues. We're not being dragged down into low margin items. And checking on the status of an order is low value."

Lloyd said the savings are being put towards hiring people. The company went from 38 employees to 138 in three years. But, besides the company benefiting from doing business on the Internet, resellers are benefiting as well, he claims. "Resellers are taking a look at some of the ways at which we've developed these tools and have started to replicate them themselves," said Lloyd. "We don't feel the orders through the Internet are cannibalizing their work."

But reseller Harvey Schalko, president of Protek Systems in London, Ont., said he, too, is worried about end-users buying Cisco and other products through the Internet. "They're [vendors] making a very, very fine line of going direct and trying to compete on the direct market and not disenfranchising the reseller," he said. "As the reseller community, we have the relationship with the clients."

He said that his company is a small integrator and added that he hasn't been impacted by Cisco's model, yet.

Other vendors are wary of electronic commerce over the Internet. "If you're talking about selling directly to end-users over the Internet and allowing them to go in and place an order for our product, that's not the strategic direction for our company," said Patrick Gray, general manager at 3Com Canada. "We have built up a relationship and loyal reseller customer base that we rely on heavily to help imagine and support our solutions. You need to do more than just click on an icon on the Internet in order to properly integrate the component into the network."

However, he added that 3Com uses Internet technology "in a very big way" by

allowing channel partners to place orders. "We use an SBI system that runs on the Internet to allow us to monitor and track sales and orders being placed from our partners through the technology that we sell."

Cabletron Canada is currently in the midst of building its own electronic commerce site on the Internet, which it hopes to unveil in the summer. "There's a certain segment of customers that want to buy directly from us and are willing to pay list price for that," said Mark Holleran, country and general manager of Cabletron Canada. "So, we're really not competing against our partners in the sense that we'll publish our prices on the site and our channels can go on and move that. We're just running up a channel model. That's exactly we've been a direct-sell organization."

He said by following this model, he's not diminishing the opportunities for resellers to earn commissions. "If we sell products in list price then we're not undercutting our partners," he said. "If we try to run things at discounted prices then we're undercutting them. So, if we use the vehicle to go capture a segment of the market that's not at price-sensitive, then we're not really competing against our partners."

In fact, Holleran said he sees his company's model as a real plus for his partners. "We're trying to build a much more friendly channel-friendly model by soliciting input from our partners."

Oliver Quast, director of marketing for Bay Networks Canada, said they have no plans to sell their products over the Internet. "If a customer can reach you directly via the Internet and you've traditionally been a channel-model company like ours is, then there could be a problem," he said.

He added that Bay Networks is taking its time to build a system that will allow customers to deal directly with the company. But at the same time will ensure resellers benefit as well. "A lot of companies are paying 'lip service' to this channel thing and then the next day they turn on this beautiful Web site where you plug your part number, your customer ID number — all given by the manufacturer to the client — and voilà: ships you our your product," he said. "That's pretty detrimental to the channel model."

Bay Networks isn't ready to take that plunge and possibly risk dismantling reseller relationships, he said. "We're thinking through the religious aspect and the common sense down to our partners," he said. "That's foremost in our minds every day when we wake up around here." □

Michelle McLenn is a freelance journalist based in Toronto.



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NT and Unix: On the Same Playing Field?

IA-64 means a whole new ballgame for computer vendors

by Jeff Evans



On March 9, SCO Canada Inc. introduced UnixWare 7 — an enterprise-strength version of Unix developed to run on Intel-based computers. This was yet another step in the journey towards a new age of where Windows, when the

former "big computer" operating system will compete directly with Unix, the enterprise-strength operating system.

The Great Equalizer: All Roads Lead To Merced

As Windows NT became the operating system of choice for a vast number of business desktop PCs and servers in the 1990s, it became obvious to many high-end enterprise computer vendors that the business computing environment would increasingly become a mixed one, combining of Unix and NT servers connected to a host of Unix, Windows NT, and Windows 95 workstations and PCs. However, it also became obvious to Unix vendors that unless something was done to counter Windows, almost all new growth and new sales would eventually be confined to Windows. Unix was in danger of becoming a "legacy" operating system, waiting for Windows NT to evolve to its strength and reliability to the point where it could displace Unix entirely.

Different Unix computer vendors responded to the Windows/Intel challenge in different ways. Digital Equipment Corp. had its own proprietary chip architecture, called Alpha, which was capable of running Unix, Windows NT and other operating systems. Digital decided to survive by collaborating with the Windows/Intel alliance. Digital even

sold its Alpha-chip technology and fabrication plants to Intel. Digital endorsed Microsoft and Windows so successfully that Compaq was forced to buy the company out and sell Digital's sets of Unix and Windows products and convert them to Compaq's assets.

Hewlett-Packard chose a different route. Beginning recently in June 1993, HP began to develop a joint strategy with Intel to develop a new, "next-generation" 64-bit processor architecture. In the spring of 1994, the HP/Intel alliance was publicly announced. The new chip architecture was named IA-64, and the first chip to be launched sometime in 1999 is code-named Merced. When it ships, it will open the way for both Unix and Windows NT software to run on a phenomenally powerful, enterprise-class chip. This means that Unix and NT will literally both battle on the same cheap, fast computers.

Over the last two-and-a-half years, most of the remaining Unix computer makers, including Sun and Silicon Graphics, have announced support for the IA-64 architecture. Between today and the launch of Merced, a host of Unix software vendors will move their software off of proprietary processor architectures, and onto the new standard for enterprise computing: Intel.

Where is Microsoft in all this? Ironically, Bill Gates, by virtue of its market dominance, gets a royalty for every Unix license sold by SCO to the company that sells about 40 per cent of all Unix licenses worldwide. Microsoft has just released a Unix version of Internet Explorer by practice; however, there has been a strong business case against Microsoft competing with itself by offering applications written in Unix as well as those written for Windows. Gates owns Windows, and until now, his company has reluctantly pushed

Windows as an alternative to Unix. From 1990 on, customers will be able to access the services of Windows and Unix running on the same hardware, in many cases, sold by the same vendor, such as Compaq.

Though extremely popular and showing rapid improvement, Windows NT and applications written for it are still undeniably less reliable than their Unix equivalents. Merced is a double-edged sword for Unix vendors, and Microsoft and its partners. Undoubtedly, Microsoft will redouble its efforts to capture NT and continue its growth in the enterprise market. Unix vendors will attempt to steal away new business that would have gone to Windows prior to the appearance of Merced.

SCO's announcement of an Intel-compatible version of UnixWare 7 gives SCO and its allies and customers over a year to prepare for their next target: the rapid exploitation of the opportunity offered by Merced. Over the next 12 to 18 months, Microsoft and its Unix competitors will be preparing for the greatest struggle in computing's history.

And what of Intel? Well, Andy Grove, the CEO of Intel, must be willing to see the other giants of the industry all scrambling to sell the largest possible number of Intel-based computers. As the author of the recent book "Only The Paranoid Survive," Grove must be aware that if his market share in computer CPU chips grows from its current level of over 80 per cent to about 90 per cent, that makers may bring action from the U.S. Department of Justice on anti-competition grounds. The Intel-Microsoft partnership may end, if only as just targets of anti-monopoly litigation. ■

Jeff Evans is Associate Editor of Canadian Computer Wholesaler. He is based in Toronto and can be reached at jef@wrygon.com.

Handhelds Target Occasionally Connected Users

by David Tanaka



The future looks bright for handheld computers, not so much in terms of mass consumption, but as corporate capillaries, extending a company's life blood to every nook and cranny of its domain. And this reemphasized corporate life blood is none other than information — in the form of price lists, contracts, order information, and every other thing that workers need to know, whether they're plugged directly into the LAN with an office computer, or at a remote consumer site.

Recently, I received a white paper on "The Business Applications of Mobile Computing," from Sybase, while *Wired Canada* sent an evaluation unit of its just-released third-generation PalmPilot. Today, it is now called the Palm III, no more PalmPilot. Both companies are defining a mobile vision that supports this idea.

The PalmPilot is the perfect device for iCom to champion this corporate capillaries role. It's light, relatively inexpensive, extremely portable, and easily connectable — not to mention very popular. The Pilot joined the one-million units sold club late last year (in second time, according to the company), and has more than 60 per cent share of the handheld market.

Last fall, iCom published the "PalmPilot Enterprise Solutions Guide," a guide to third-party developers writing software for the PalmPilot. iCom claims there are more than 5,000 software developers and 500 hardware vendors working on products for the Palm devices. Many of these extend the usefulness of the device by allowing synchronization with popular organizers, or to enterprise information systems like Lotus Notes. Hardware add-ons include anything from wireless modems to global positioning systems.

The Enterprise Guide also outlines iCom's strategy for the Palm, and in the same implies, it is very much a look to extend the reach of the enterprise. With the Palm III,

iCom has taken connectivity a step further by including a "File Linking" feature. This allows a user to import data such as updated price lists from a file located on a remote server. This dovetails nicely with the enhanced HotSync feature (generously available as a Network HotSync option), which allows users to synchronize their Palm III using a TCMP connection, either dial-in or on a network. The built-in e-mail client is compatible with MS Exchange and Outlook, Lotus ccmail and Eudora Pro. And the basic memory has been increased to 2MB.

In terms of ergonomics and aesthetics, the Palm III incorporates some modest design changes. Some of the square edges have been softened, giving the impression that the machine is slimmer than it actually is. There are also some minor cosmetic changes to the buttons and a flip-up cover has been added to protect the screen. But few will mistake the new device for anything but a PalmPilot, even though a no longer goes by that name.

Sybase's white paper is interesting in that it presents a broader vision of "customer-centric computing," by which it means the ability to provide the customer with immediate access to useful information. "Corporations are extending data to where business

transactions occur in order to provide customer-centric service," notes Sybase. These include a range of platforms and applications, of which handheld devices are one part.

Handheld computing fits into Sybase's vision of customer-centric computing by allowing an organization's increasingly extended, occasionally connected workforce to have access to corporate information. The paper cites Gartner Group projections that by the year 2001, 60 million workers worldwide will "regularly work outside the boundaries of the enterprise and without continuous LAN or high speed WAN connections." The paper further notes that over the next five years, 83 percent of IS departments will be supporting an extended workforce, and that the handheld market will be worth US\$1.77 billion by 2002.

Being a software company, Sybase brings a software solution to this party under a set of technologies called Adaptive Component Architecture. A couple of interesting components are SQL Anywhere, a small-footprint relational database, and SQL Remote, an application program that updates only changed data. Sybase says, SQL Remote uses "asynchronous, message-based application." This means that databases can be replicated — through e-mail, for example, without the need for a direct connection between the databases.

Sybase says the City of Edmonton is using an SQL Anywhere based application called POSSE along with handheld computers equipped with cellular modems. The tool allows planning department inspectors to capture data at inspection sites and send it back to the office, or download information they need in the field. ■

Contacts:

<http://www.sybase.com>

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David Tanaka is a Vancouver-based journalist and Editor of *The Computer Paper*. He can be reached at dant@comp.ca



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by Jeff Krasner

What's a real printer?

For starters, there's a growing demand for color in the corporate market, and a truly amazing run in the level of performance of many categories of ink-jet printers. Printers continue to drop significantly in categories such as color lasers and sublimation photoelectric color printers. Manufacturers and resellers who get caught on the wrong end of sudden change are suffering; those who have bet successfully on leading-edge technologies are enjoying increased sales and market share, although margins continue to be slim.

Meanwhile, some trends have continued almost unaltered over the past year; color ink-jets are still far and away the printers of choice for the SOHO market, as are networked lasers in the medium to large business market. And printer supplies and services are the main profit opportunity for resellers.

Segmenting The Market

Printers on the market fall into two main groups: ink-jet and microelectronic laser, and four market categories: impact printers, specialty printers (mainly large format), color lasers and portable printers.

The two main markets are SOHO and corporate. Essentially, the dividing line between SOHO and corporate is whether the printer is intended for efficient, essentially unattended use on a network, or for standalone use on a desktop or portable PC. In practice, this distinction can blur, but it is still a useful rule of thumb.

Ink-Jets: SOHO And Corporate

The vast improvements in ink-jet printers between 1992 to 1994 allowed ink-jet technology to eliminate dot-matrix (DPM) printers from the mass market. In 1995-1996, ink-jets decisively won the war for the SOHO market against the personal laser printer. In 1997, ink-jets showed a rapid increase in their ability to create high-quality color and black-and-white output, on plain paper, and "near-photographic" image

output, when using special photo-quality supplies. In late 1997 and early 1998, the three most innovative ink-jet market leaders — Hewlett-Packard, Lexmark and Epson — introduced "true" photo-quality printers for the home and office. As well, HP and Epson brought out new networkable ink-jets aimed at offering color to the enterprise, in competition with traditional high-end, high-cost specialty color printers.

Follow The Money

The big story for resellers in the ink-jet printer market continues to be the supplies market, with some entry-level SOHO printers retailing for less than \$200; it is now common for customers to spend more on ink and paper in a year than the price of the printer.

This helped spur a search by those customers for "off-brand" color ink cartridges. Although ink-jet printer vendors continue to discourage the use of any but their own brand-name ink cartridges, they seem to have backed off earlier than in the case of monochrome ink. In fact, although generic toner cartridges have become quite accepted by many laser printer users, the peculiar requirements of current ink-jets has kept off-brand color ink cartridges in the category of "one of your own risks."

Increasingly, it's not only legitimate resellers who have detected the business opportunities in the supplies market. A major fraud problem has surfaced in a region laser laser operations in various parts of Canada. High-powered telemarketers call companies with laser printers, pretending to represent, for example, Hewlett-Packard. They convince the printer on the phone into accepting an order for one or more toner cartridges, and then send substandard or unusable cartridges at vastly inflated prices. Their victims are often end-users from small companies or schools (in one case, a church), who are easy to fool. Hewlett-Packard is trying to expose and shut down the fraudsters, but this situation points to an interesting wrinkle in the market, where supplies are the golden goose for profits.

In terms of technology directions, the big story in 1997 and 1998 was the increasing use of mass-technology to manufacture the incredibly tiny ink-jet nozzle mechanisms that give ink-jets their high print/performance value. A scanning electron microscope

The Players

Apple

The original player in PostScript lasers was the PostScript-compatible LaserWriter line. Apple also markets ink-jet printers, including a portable model. Although Apple printers are still popular in the Mac market, the brand has been caught on in the mainstream Windows printer market on plain desktop and all-in-one models, and with the decline of the Mac's marketshare, Apple printers' share has generally declined as well. See <http://www.apple.com>.

Brother

Brother is part of the First of the printer market. It makes inexpensive, efficient, straightforward products that get more value than you'd expect for a lot of ink and volume. Brother has been a third player in low-cost, personal laser printers, and more recently has become a leader in multifunction devices. In both categories, the company offers very economical, simple to operate products where the emphasis is on value. Brother recently launched an aggressive color multifunction device, the Color MFC-7420, as example of the innovation that has made them a leader in the multifunction market. See <http://www.brother.com>.

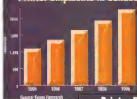
Canon

The value leader in the ink-jet market, a slight examination of Canon's products reveals that the company is also the leader in low-cost entry level lasers, which are very commonly used in PC bundles and by value market buyers. In competitive reviews, Canon's printers often produce unexpected results in terms of speed and photo-realistic quality, but the combination of brand name, price and good reliability and service makes them the mainstream entry level brand of choice. As a general office technology generally including laser printers, copiers, and faxed Canon has its foot in the high percentage of Canada's offices, and its foot can be counted on to help it hold on to market share in the face of somewhat more technologically advanced competitors. For more information, contact <http://www.canon.com>.

Epson

Like HP, Epson makes consumer and small commercial as well as printers though at PC, Inc. has failed in the Canadian market, which allows the alien the ability to provide ink-jet and graphics solutions. Epson has also been one of the principal beneficiaries of the ink-jet boom, leveraging its technology edge like it has provided 1,400 dpi printing, and low-cost photo quality ink-jet output to gain a very respectable market share over the last four years. Epson has in its amazing 33 new models of ink-jet printers ready for sale in the technology to place products in every conceivable price/performance segment of the market, to absorb the maximum market share possible. Its latest products range from a 70-ppm by 16-inch \$14,795 professional graphic arts proofing printer which is loaded with its own high speed print server, to the new Epson Stylus Photo 85 and Stylus Photo 700, for photo quality printing in the professional and consumer markets respectively. For more information, contact <http://www.epson.com> or 1-800-485-7766.

Printer Shipments in Canada



is needed to clearly see the projected structures. Along with postpaid manufacturing advances, great progress was also made in ink chemistry and printer control and driver software. Printer makers continued to bundle attractive software packages with their consumer models, hoping to wing the initial road sale by offering an attractive value proposition, and make profit back by selling supplies over the lifetime of the printer's use.

One downside of the super cheap consumer printer is that below a certain price point, it is very difficult for manufacturers and suppliers to provide for low-priced product. Even one warranty service transaction is likely to more than wipe out the profit margin on the printer. Yet, the combination of low-cost plastic components, the mechanical wear and tear of the printing process, and the demands of a rough family-comping environment (think sale 10-year-old

with network hardware or other pre-installed or available as an option. With ink-jet speeds close five per cent ink coverage per page) approaching that of lasers, more businesses are getting used to the concept of leaving color output available in every office.

Ink-jets are also competing strongly in the large format (11-inch by 17-inch and up) market, and threaten to displace high-end dye sublimation and color laser printers.

Printer Revenue in Canada



Lasers: Corporate And SOHO

In the laser category, the situation is almost the reverse of that of ink-jets. By some measures, lasers in the SOHO market have shrunk to less than 10 per cent share, while in the medium to large business market, they have about 90 per cent share. The personal laser hangs on in SOHO installations where high volume of fast, monochrome cost output is needed, a profile that fits many home offices or small businesses. There is a possibility for at least a small revival of the



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Ganncom

Ganncom has devoted its entire efforts to the specialty printing market. High-speed, line-art capable printers, laser printers optimized for the imaging and text-art markets, thermal bar code printers, specialized travel industry printers, point servers, and IBM compatible printers. This has allowed that increasingly the Ganncom brand has disappeared from consumers' PC usage and vendor's inventories. The question is whether manufacturers of high-end color markets will provide a facility they have opportunity to be featured. For more information, contact <http://www.ganncom.com>

Hewlett-Packard

The traditional leader in the printer market, HP continues to dominate in the laser segment with a full spectrum of laser printers that perform in everything from the desktop market. HP still has a major market share, but it has been somewhat weakened by Canon's excellent inventories, plus Canon has been making first-class color competition. Nevertheless, HP's brand name and reputation for quality and a great machine to make it the choice in printing. In all markets, HP is particularly benefited from being one of only a couple of printer vendors (the other being Epson) who can provide an "end-to-end" usage technology solution, from scanners and digital cameras through to desktop and notebook PCs, to a full range of work areas and networked printer options. HP has also been a pioneer in the multifunction device market, though Brother has as far surpassed HP in terms of market share. See <http://www.hp.com>

Lexmark

Formerly a division of IBM, Lexmark was spun off as a privately owned independent company about five years ago, and has prospered ever since, attracting the firm's own public with a strong offering, and stock prices have risen sharply since then, fueled by continued rapid growth of sales and profits. Lexmark benefits from both a first-rate R&D base, resulting in highly competitive, unique patented color and paper feed technology, as well as a design team that has created some of the best, ergonomically designed lasers on the market, and some of the easiest to use ink-jets. The Open Ink of business leaders, including the Windows printer management software, comes acceptable with market leader HP in the high-end market. Lexmark's ink-jets are very popular in the consumer/SMB market, and also performance bolstered by a flexible color-ink bundles of software. In 1997, Lexmark launched a line of low-cost, affordable color lasers that reflected color laser use of materials. Although very successful, Lexmark has had its share of setbacks: a line of Windows personal lasers fell by the wayside as Windows acquired low-cost users out of the SMB market in 1994 to 1996, and the Windows multifunction device did not achieve the success desired. For more information on Lexmark's products, see <http://www.lexmark.com>

NEC

The printer business, perhaps seems like a subtle compared to 1990s other computer product lines (including its V-Series notebooks and desktops), but the company makes some excellent, high-performance printers for the business/laser printer segment, and has a sig-

nicant printer market, in small home offices and businesses currently relying on ink-jet rethink the advantages of lasers.

Lasers are still cheaper than ink-jets to operate, and often have a reputation for greater reliability. As many small businesses become networked, the increased volume of printing justifies adding an office laser to the network, in addition to personal ink-jets.

On the corporate side, the emphasis is on greater productivity (greater speed and expanded paper feed options), manageability (centralized control and monitoring of printer usage) and lower total cost of ownership (reliability, warranty coverage and ease of use). The traditional leader is still HP, although Canon, Xerox, Apple and a number of other players have more presence in the laser market.

Impact Printers

The impact (dot-matrix) printer market went into decline as a result of improvements in ink-jet technology, but still persists in an obscure but important part of enterprise computing: the creation of multipage forms. Here, vendors such as Lexmark, Epson, Ganncom and Okidata still find a steady and occasionally lucrative customer base. Okidata, in particular, boasts of its "link-tough" printers, and has actually opted to develop faster and more reliable models. Current Okidata 24-pin printers include the ML305/165C, with a print speed of 192 cps/letter quality) to 600 cps (high speed draft quality)

Color Lasers

The color laser market was formerly a tiny, ultra-expensive and specialized segment of the printer market. Adding to the upfront expense of color lasers (up to \$30,000 per printer as recently as a couple of years ago) were horrendous operating costs. In addition to expensive laser supplies, the printers needed regular servicing, adjustment, and preventive maintenance and still malfunctioned regularly. Service contracts cost sev-



eral thousand dollars a year. In late 1997, both Xerox and Lexmark announced new color laser lines that featured much lower hardware costs (under \$6,000 in some cases), and radically improved supplies and general reliability, leading to much lower total cost of ownership. QMS also introduced some interesting color lasers more than a year ago. Tektronix's Phaser line is sometimes lumped into the color laser category (although it actually relies on liquid wax deposition technology, not laser), and the company also has a sizable presence in



Portable Printers

Although notebook computers account for around 17 to 20 per cent of PC sales in Canada, sales of specialized printers for mobile use are only a tiny fraction of the printer market. Most notebook PC users simply do without portable printing capability, opting to use whatever printers they also find in offices or copy shops in the course of their travels. Companies such as Apple and Primeal offer custom designed portable printers, with Primeal, perhaps the leader in true portability. The latest Primeal model weighs little over a pound, and looks like a long, thin flashlight. If a reseller is interested in providing a range of accessories for portable solutions, then it is worth considering having a source for portable printers. Otherwise, the market is so limited that it can be disregarded.

Where To Go in 1998?

It seems very likely that the ink-jet printer category will continue to expand in sales, both in terms of units and market share. In particular, at the high-end large-format segment (tablets and larger), extremely high-quality printers will become much more common in business, as costs and complexity continue to drop.

Networking of both LAN and Web varieties will become much more prevalent for ink-jets. Business users will add ever-improving network management features and a range of specialty options, such as security and privacy, duplex printing, and larger and more varied paper feed and document handling capacities. And suppliers will remain the principal profit opportunity with increased competition between mono-brand and off-brand alternatives. The "paperless office" looks even farther away than ever, which is very good news for resellers. ☐

Jeff Evans is Associate Editor of Canadian Computer Wholesaler. He is based in Toronto and can be reached at jeff@ccwpc.com

affordable market share in Canada. One notable recent model is the HP DesignJet 1200, a 12-page, 300 dpi sublimation laser. The SuperSpeed 1200 has advanced features such as 4x4x4x4 media handling technology, and support for Windows printing, and MMS, Smart Tag, and quality enhancement technology. For more information, call 1-800-325-4128.

Obidians

Obidians offers a good quality line of "laser class" LED monochrome printers which have found decent sales in the personal laser market. Obidians introduced a range of printers and a product line led, which is still part of line of the most interesting new products in the 40-page line, appeared in July this summer. The Obidians 40, described as a "desktop printer" (not a "page printer") is a 4-page (color or black-and-white), networkable, PostScript compatible workstation. Obidians also offers the Obidians 44 multifunction device, and eight laser models of its LED page printers, ranging at print speeds from 4 ppm (the Obidians 400) to 28 ppm (the Obidians 48 series). Obidians appears to have decided that it is in complete lockstep in the printer market, it has a complete line of ink-jet, laser, and networkable products that match the latest from HP, Canon, and Epson. The company appears to be making progress towards this goal. For more information, contact info@obidians.com.

QMS

Once one of the great names in the history of laser printers, QMS established a reputation for unrivaled capabilities and quality, and was a leader in both monochrome and color PostScript output. The company stumbled in the early 90s, as it moved and re-invested its resources both in product and the competition. It hasn't really recovered from that decline despite some good products in the color laser and printer management software categories. See <http://www.qms.com>.

Tektronix

The Tektronix Phaser line has been popular in the corporate market due to its relatively low cost of materials, and the durability of the technology it adopted with the latest laser technology. For example, the Phaser 550 (laser) with a 3000x600 dpi resolution delivers PostScript laser processing and print speeds of up to 14 ppm for color and 18 ppm for black-and-white. The Phaser 550 color printer is priced at \$10,999. For more information, contact info@tektronix.com/Color_Phaser/products/.

Xerox

A long-time leader in office document systems, Xerox leads a steady market share in the monochrome laser printer category, with models that offer special features such as duplex printing, and password protected security. Xerox also breaks by offering a selection of document solutions, from desktop to full range document printing system. Xerox also launched a line of multi-approved low-cost color lasers in 1997. The company also made a successful push in the 3000 dpi market, with a line of multifunction devices, and a brand new 3000 dpi of 700 dpi performance office laser, intended for the small business market. For more information, see <http://www.xerox.com>.

the high-end specialty printer market. All of these players are threatened, however, by competition from the latest high-speed, networkable color ink-jets.

1998 will probably see a shakeout in this market segment, with color lasers filling the needs of the portion of the enterprise printer market where their virtues (high-volume capability, interchangeability, excellent monochrome and color output) make them a good buy.

Ink-jets will probably fill the color needs of much of the business market, especially at the low to mid-range.

Get the **Right** **Tool** for the **Job**

by Russ Corralliers



Everyone now knows something about the World Wide Web. Evidence of it is everywhere; the ubiquitous "page driver your computer can't" shows up on advertising on everything, from cars to high-performance automobiles. It is, undeniably, a phenomenon, and everyone wants to become a part of it. Fortunately, with the new generation of Web authoring software, putting together a site and getting it up onto the Web is now easier than ever.

In the past, Web authoring tools were very hit-and-miss. Although the tools could be used to create Web pages, they also tended to be a bit counter-intuitive to people who know the HTML code already. Certain layouts achievable with a few keystrokes in the code itself were nearly impossible to create in these editors. The code produced was truly nightmarish, too — strings of indecipherable text intermingled with tags in bizarre configurations. Any editing required on a different software package could be a chore and a half! The tools, at that point, were for the true beginner with a desire to put together a Web page — any Web page.

Most companies have come a long way with their Web authoring

"You've got a Web site, now engage your audience. Target your customers. Have some value-added."

— Roberto Drassmanow, SoftQuad

kits since that point, banking on the continued popularity and potential of the Web, from light-hearted entertainment all the way to serious business applications.

"The future for the Web is very bright through E-commerce, intranet communications (and) corporate exposure," says Bill Hinzock, spokesperson for Queens-based Corel Corp.

Roberto Drassmanow, general manager of Toronto's SoftQuad Inc. agrees, noting the functional shift of Web authoring software to reflect the uses of the Web, and the future potential. "A great-looking Web site is not enough. You've got to go beyond that, to functional Web sites that actually do some work for you."

To that end, vendors have been adding a number of truly powerful features to their authoring software, which not only take full advantage of the existing HTML standard, but also lend support to scripting and plug-ins. Thus, in addition to keeping the tools relatively simple to use, means powerful packages for end-users, whether they are beginner developers, small companies or large ones.

"The Web can really equalize small companies with big businesses," says Anne McKinn, product manager at Microsoft Canada Co. "If you go to their Web sites, you don't necessarily know that they're e-commerce shops based on the quality of the information you can see on the Web sites. What Front Page really does is de-complicate the Web and make it easy for both new users and Web professionals to create and manage Web sites."

Also, support for HTML, exporting from other software packages, has been on the increase. Word processors like Microsoft Word and Corel WordPerfect recently feature conversion to HTML in the "save" options. Desktop publishing and graphics layout programs often feature the ability to save the graphics and text to HTML. Indeed, as the Web flourishes, many software companies are trying their best to tie in their existing products with the Web, wherever possible.

There are many packages that are designed specifically for Web page design. What's best for your customers depends on their specific needs.

Drawnweaver 1.0

Manufacturer: Macromedia Inc.

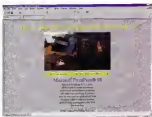
Suggested Retail: US\$499 (US\$399 promotional)

Web site: <http://www.macromedia.com/draw/drawnweaver/>

Better known for its Director multimedia authoring software and for the Shockwave plug-in, Macromedia makes a strong entry into the Web authoring field with Drawnweaver 1.0. Drawnweaver easily has the best number of all the products reviewed — providing the user has a large screen set at high resolution. Instead of an integrated interface, Drawnweaver splits the various components up into floating windows arranged around the screen. This arrangement is optimal for bigger screens. Users with smaller screens may find windows going "bouncing in action" while off to other areas of the program, or the overlap of windows confusing and cluttering. For larger display settings, though, the set-up is a dream-come-true for many users. For one major reason: split-screen editing. Unlike most HTML editors, which force the user to toggle between WYSIWYG editing and HTML source code editing, Drawnweaver's floating window setup allows the designer to use both simultaneously. Any changes in one window are instantly reflected in the other, so the user can do minor tinkering in one window and monitor how it affects the other, without the hassle of toggling back and forth every time.

All of the basics were to be covered. The WYSIWYG editor means and drags elements, mostly, to simulate browsers of different sizes. ActiveX, Java and plug-ins are available with a few clicks, tables are easy to insert and edit. Items can be modified individually or in blocks. The code produced is generally clean, and even comes with formatting for increased legibility. (Definitely handy if you have to sift through it manually at a later time.) Built a FTP gets the finished site information to the destination Web server when the project is completed.

The only major gripe: It would have been nice to see more unique manipulation capabilities (although scaling can be done manually in the HTML window, and there is a nifty



Available 100 Percent window allows for user to design a page with actual elements to see how they work in effect.

image-resizing tool included from the properties window).

Not the most advanced features on the package. In addition to supporting dynamic HTML, Drawnweaver makes a page from Macromedia's Director software with the introduction of time-based event editing. The "Timeline" feature uses the layering and stacking capabilities of the new HTML 4.0 standard to create animation through changes in the size, stacking and positioning of objects on the page.

Despite its hefty pricing, Dreamweaver is a powerful little package. This is just version 1.0; it will be interesting to see how the package evolves in the future.

FrontPage 98

Manufacturer: Microsoft Corp.

Suggested Retail: US\$149

Web site: <http://www.microsoft.com/frontpage/>

The heavyweight champion, FrontPage has been the top-selling Web authoring package for a few years now. Previous versions have come jam-packed with features and applications at a relatively low price, and this year's version is no exception.

The WYSIWYG editor handles all the basics with ease, including image styling and manipulation, easy table manipulation and editing (with obvious support for the COLSPAN tag!), and browser testing to simulate different screen resolutions. Most object modifications are made easy, although some changes involve a bit of hacking through menus. The code produced is cleaner than in previous versions, although a bit of formatting would have been a nice touch.

Support is included for Java, ActiveX and plug-ins, and certain active elements such as "mergers," hot counters, search and "hover" buttons can be added with a single click. In addition to the WYSIWYG and HTML source editors, FrontPage also provides a preview window to see how the active elements on a page will work.

As before, FrontPage 98 comes bundled with Personal Web Server software and site management software, to manage sites either remotely or run them right from a personal machine. Also included are pre-set page themes, which are customizable with the included Software Developer's Kit, Internet Explorer 3.0, Internet Mail and News, GIF Animator, Image Composer, and a Web Publishing Wizard to take the user through the whole process.

While not the shiniest and most powerful of the packages, FrontPage is definitely the best value of the bunch, offering a lot of useful tools without costing a bundle.



The table tool in HomeSite allows the user to put together a complicated table with easily configured cells—in seconds.

HomeSite 3.0

Manufacturer: Allaire Corp.

Suggested Retail: US\$99

Web site: <http://www.allaire.com/homesite/>

HomeSite stands alone in this group as an HTML-only tool, providing no WYSIWYG editing capability. Instead of a tool for beginners, HomeSite is aimed more at new HTML coders who would rather use a Web authoring package as a supplement to their abilities, instead of a replacement.

HomeSite's "Quickstart" option steps the user through the various parts of Web page construction and touches on both the required elements and things that are nice to have, even if they're not essential. The interface consists of a source-editing window, with editing tabs for adjusting text, inserting images, tables, scripts, forms, Java and ActiveX. There is also built-in support

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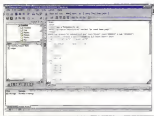
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HotMetal Pro 4.0: tags either click on the tag and it appears in the document.

for sister product Cold Fusion. The program will also verify that included links are valid, and will validate the HTML against standards.

One of the most impressive things about the package is the table-creation tool, which allows the user to create a complicated table with cell columns and row configurations. For users who need to create a lot of tables, this tool alone may be worth the price of admission.

The major disadvantages of HotMetal are direct results of the

focus of the tool. The program assumes that the user has a working knowledge of HTML. Essentially a high-powered tag-pasting tool, the program will drop the requested tags into a document exactly where requested, even right in the middle of other tags. For tags with incremental values, like the font size tag, hitting the first size increment button twice will generate two `` tags instead of one `` tags. Since the product is aimed at people with a working knowledge of HTML, however, it's easy enough for the user to edit the first tag by hand anyway. The code produced is as clean as the user makes it.

Definitely not a beginner's tool, HotMetal is more like having a third hand which types HTML at high speed. It will not help people who haven't coded in HTML, however.

HotMetal Pro 4.0

Manufacturer: SoftQuad Inc.

Suggested Retail: US\$99

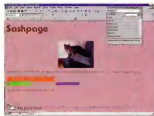
Web site: <http://www.sq.com/products/hotmetal>

One of the originals, SoftQuad's HotMetal is continually more refined. Previously featuring a pseudo-WYSIWYG interface, HotMetal Pro 4.0 now adds not only the ability to edit the source code directly, but also a tags-on view, which shows the tags hovering over a WYSIWYG view. The program comes with an adequate WYSIWYG interface (some users complain about its accuracy, but we saw no problems worth speaking of here), and also supports multiple in-source previewing, in order to test HTML documents on a variety of browsers without leaving the program.

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Getting a lot of attention, is the support for CSS (Cascading Style Sheets), which takes full advantage of the HTML 4.0 standard.

As a whole, HotMetal 4.0 is a little bit less intuitive than some of the other packages, but it makes up for it with pure power. For example, the Attribute Inspector hovers over the screen, and when an object is selected, this window shows virtually all the possible modifications and properties for that particular tag. These properties can be changed

either with pull-down menus or by fill-in-the-blank, where appropriate. While some other editors won't even acknowledge ALT tags for image files, HotMetal supports a variety, including onMouseOver/onMouseOut JavaScript for links and images.

As for the basics, the program produces clean code, supports ActiveX and Java, features easy table creation and manipulation, and onscreen editing. The program will also find broken links, validate the HTML code, and publish the site to the Web server. The software comes bundled with a number of assets to help with the creation process, including PhotoImpact SE, Upload GIF Animator, and HotMetal Power Tools.

HotMetal is the professional developer because of its power and interface, HotMetal 4.0 could benefit most users, if they have a bit of time to explore all of the program's options.

NetObjects Fusion 2.0

Manufacturer: Net Objects Inc.

Suggested Retail: US\$295

Web site: <http://www.netobjects.com/products/fusion2.0.html>

The problem with many WYSIWYG editors is that sometimes what you see in the browser isn't quite what you saw in the editor. Although most do quite well nowadays, there are always variations from browser to browser, ranging from minuscule to outrageous. Fusion's ability to solve that problem is both its saving grace and its biggest flaw.

Fusion, instead of treating HTML as the dynamic formatting language that it is, opts for a design perspective instead, so that what works

A Bit Of Web History

by Sean Carruthers

Originally started in the early '80s by Tim Berners-Lee as a networked information project at CERN (the European Laboratory for Particle Physics), the World Wide Web has grown to the point where it is now one of the primary uses for the Internet.

In fact, this little academic "tool" is probably the single most important factor in the explosion of the on-line community over the last few years, and has revolutionized the way we think about communication, networking, and parts of society in general.

The power of the Web lies in its interactivity and powerful integration of both textual and visual media along with programming scripts and applications. At its inception, the Web was often jokingly referred to as the World Wide Wait, despite the promise of the technology in the early days of the Web, transfer speeds were too slow to gracefully handle pages with a lot of visual information.

In a relatively short time, both Internet backbone speeds and connection speeds between nodes increased dramatically, allowing users connected directly to the 'Net to take greater advantage of the Web, creating more sophisticated and bandwidth-intensive pages and applications.

Shortly afterwards, connection speeds for individuals connecting to the net via modem also shot upwards, from a paltry 14.4K, to a seemingly blooming speed of 33.6K, or even 56K. Web sites, the stage was set for the widespread use of the Web as an informational and entertainment tool. And now, with the wider introduction of cable modems into the personal computer marketplace, and the potential for relatively inexpensive high quality streaming audio and

video for all users, the Web stands to become even more popular and pervasive than ever.

Although it started out strictly as a method for academic informational exchange, the Web soon outgrew academia and became used for many different purposes: personal information, entertainment, software downloading and retrieval, and business, among other uses. Because of the anarchic nature of the Web, almost anyone who had the urge to create a Web page could do so. All that was required was a knowledge of HTML (Hyper-Text Markup Language, the system of tags used by World Wide Web browsers to enforce formatting) and the ability to get files to the Web server. Sounds simple, right?

Most early Web pages were fairly simple affairs, consisting of basic text on the standard browser background color. Getting complicated meant adding a picture or two to spice up the page, or changing the background color. The more advanced users (that generally meant programmers) could add in tables, forms, and simple scripting to interact with other files on the server and perform miscellaneous, maintenance tasks.

With the influx of users to the 'Net, so also came a growing interest in self-publishing of Web pages. And as the speeds of connections increase and Web pages become more complicated, both physically and with other applications, personal users are looking for more sophisticated ways to present themselves to whoever may be looking at on their Web sites. Since most Web users are not programmers, they are demanding newer and better tools to create, edit and maintain their own personal and business sites.

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on one browser won't be shuffled around and reformatted on another. The concept is simple: Fusion takes all of the items on the page that has been designed, breaks them all up into manageable graphic chunks, and then reassembles them on the page as a table.

The obvious advantage is that some of the conventional wisdom of pre-4.0 HTML can be ignored, so that the user can layer things willy-nilly on the page in a precise design, without worrying how it will translate from one browser to the other. Text can run over top of graphics. Graphics can interlock. If it can be designed, it can be turned into HTML.

Unfortunately, this set-up falls down in a few key areas. Because it's meant as a design tool, the program is far from intuitive. With other browsers, the user just starts typing to add text. Fusion requires special text boxes, like in desktop publishing. Because it breaks everything up into smaller chunks and then reassembles it, the code produced is a nightmare of incomprehensibility. Source code could only realistically be edited in Fusion because of this. Also, the fact that Fusion turns whole pages into one huge table slows down the page load-up time (unless, of course, all of the objects appear on the target browser until that browser has received information on all of the table pieces).

NetObjects Fusion is a powerful tool for bringing non-standard layouts to life on the Web, but it's definitely more a designer's tool than a beginner's tool. Those with a bent for wild graphics may find this program indispensable, but everyone else should run and hide.

PageMill 3.0

Manufacturer: Adobe Systems Inc.

Suggested Retail: US\$99

Web site: <http://www.adobe.com/products/pagemill/index.html>

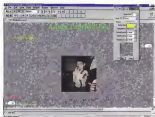
More a word processing program with Web capabilities bolted on than a proper HTML editor, PageMill shows an history as a publishing program quite clearly. It does not suffer the same annual file format wars that the preview window quite admirably and features easy table manipulation and importing, but more basic problems emerge.



Fusion takes a design perspective on HTML.

Formatting seems to be a problem for more complicated layouts, even on the same line seem to be

bound by the same justification regardless of object type. Some pretty basic modifications require a lot of searching through menus and buttons. In addition, the final code is quite messy.



PageMill is a fairly basic web authoring tool for creating simple Web pages in a speedy manner.

On the up-side, PageMill 3.0 comes bundled with Photoshop LE 3.0S image editing software, and the Acrobat 3.0 reader. If you want to easily create a pretty basic page without knowing too much about the HTML, PageMill does a good job. However, the price difference between PageMill and FrontPage may be minimal enough to justify stepping up to a full-featured package.

WebMaster Suite
Manufacturer: Corel Corp.
Suggested Retail: US\$399
Web site: <http://www.corel.com/user/Web/Webmaster/index.htm>

Essentially a bundling of several of Corel's Web utilities, the WebMaster Suite offers a lot of useful (though not necessarily mind-boggling) tools for creating and maintaining both local and remote sites and incorporating databases.

The WEB DESIGNER portion of the suite is a bit confusing at first. The user is able to toggle between the design window and the HTML source code, which use different menus. (The design window has a full window, and the HTML window has a basic "view" button, but not much else beyond the ability to manually edit the code.)

In addition the design window isn't precisely WYSIWYG, as it doesn't recognize all valid HTML tags. For example, the design window would not process a <TR ALIGN=RIGHT> tag, only <ALIGN=RIGHT> tags within the table cell. However, one of the items in the Tools menu is a Browser Preview, which launches the document

Sun teams with VRML group

Sun Microsystems Inc. has joined the Virtual Reality Modelling Language (VRML) Consortium as a voting member to promote the compatibility and interoperability of Sun's Java 3D API technology and the VRML 97 standard.

Sun and the VRML Consortium have stated an intention to establish a working group to explore closer integration of Java 3D

and VRML.

The Java 3D API can be used to develop applications that model, animate, simulate and view 3D content. Virtual Reality Modelling Language can be used to manipulate 3D content created by modelling and animation authoring tools.

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Corel WebMaster's site manager interface shows all files and links associated with a certain page on the World Wide Web.

is the default browser.

The WEB-DESIGNER portion does feature support for tables and frames, as well as Java and ActiveX. Templates, navigation and imagecrop support are also included. Images can be edited with the Corel Web Photo Paint program, which comes bundled in the suite. The code generated is relatively clean, although some formatting would be a plus.

The WEB-Site Manager section of the suite is probably the most impressive, allowing for managing of multiple Web sites both on the local machine and remotely over the Internet. For example, entering the location of the Web pages brings up a list of all files in that directory in the left-hand window. A link tree in the right-hand window — which can be expanded out as far as the user wishes — shows the extent of the site and what links to what. (Warning that the tree chops off the link information before the end, making it hard to see the full link locations at a glance is probably not-picking. It is otherwise a handy little tool.)

A major gripe: the installation changed the file extension associations on the test system for .gif, .jpg and .tif files to the Photo Paint editor, which didn't properly launch when one of these extensions was called. Although not a major problem, it was an annoyance nonetheless.

Also included in the package are WEB-DRAW, WEB-MOVE, WEB-WORLD, Netscape Navigator 3.0, thousands of clipart images, and 30 days of free Web site hosting for registered users. Though it comes off as a loose collection of Web tools, and not a fully integrated package, WebMaster Suite still contains a number of useful tools which make this a good collection to have.

So, which package is best? Picking one clear winner is impossible, because each of the packages has something to recommend it over the others, and each seems to have a slightly different focus.

For the truly novice user, Adobe's PageMill 3.0 does the job nicely, but Microsoft's Front Page 98 is the better value overall, featuring a lot of additional software and functionality.

"If you think about the Web, just in terms of things like innovation, competition and even opportunity, we feel the Internet holds a lot of promise, more so than anything in the past 10 or 20 years."

— Anne McKeon, Microsoft Canada

For more experienced designers, Macromedia's Dreamweaver 1.0 walks away with the prize, due to its clean code, multi-media editing ability and power. SoftQuad's HotTMetal 4.0 also seems nicely in this area.

For site management, Corel's WebMaster Suite slightly outweighs Front Page 98, although both have their good and bad points, with a lot of useful features, and the tendency to be a bit overwhelming and confusing. Either way, the user will have to study up a bit and play with things to get a feel for the software.

For sheer power in the graphic design field, NetEffects Fusion is the way to go, but don't expect it to do anything else with any ease or competence.

Lastly, for those who simply want a helping hand, Allaire's HomeSite 3.0 is the best bet. The table tool alone would be worth it for users who find themselves creating a number of tables.

All of the products have definitely come a long way since their early days. With all of the companies committed to creating and selling Web authoring tools for both beginners and professionals, look for further significant improvements down the road. ☐

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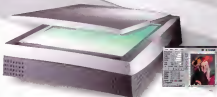
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Resellers

Home-war

by Paul Liber

A decade or so ago I was at a dinner party with seven friends when, as frequently happens during such events, the conversation turned to work. For a few hours we took turns complaining about our jobs and, of course, our bosses.

After the polite session ended, one of the guests made a rather acute observation: she pointed out that every one at the party worked for the government in some capacity. There we were — teachers, educational administrators, social workers, and a customs engineer — all living relatively high off the public hog and complaining bitterly about it.

Only two people in the room owned computers, which they used for games and a little word processing.

Flash forward almost 15 years to a similar scene. I was at a dinner party with seven others when, as frequently happens during such events, the conversation turned to work. While there was considerable discussion, there was almost no griping or complaining. I could not help but observe that not one of us worked for the government or large corporation, in any capacity.

There we were — self-employed writers, financial planners, an architect, therapist, editor and video producer — working hard to earn a living and as happy as pigs in mud.

All but one person in the room owned a computer, and all the computer owners were hooked up to the Internet.

Times Have Changed

My how times have changed. Over two million Canadians are now self-employed, according to Statistics Canada. Twenty years ago, almost 74 per cent of Canadians worked for various levels of government; 14 per cent were self-employed. Today, over 15 per cent of us are self-employed, while only 14.6 per cent work for the government. Self-employment rose from 7.5 per cent of the non-poor in employment between 1980 and 1985, according to the Canadian Labour Congress.

While many entrepreneurs depend on computers for word processing, accounting and Internet access, the small business market for computers is under-penetrated, according to the firm *Info*, Calif.-based market research firm. Deloitte & Touche, the organization projects that the overall PC market will grow at more than 15 per cent this year, but that the small business computer market will grow by over 20 per cent.

It's no wonder that small businesses and small offshoring offices (SOHO)-based businesses have become an important market for many computer manufacturers and resellers.

But resellers have to understand the dynamics of small businesses in order to penetrate the market. "It's a lot of one-on-one, two-hour sales with limited opportunity for large-scale volume added," says Paul Johnson, a Toronto-based small business consultant. Even so, a recent survey by IDC/LINK, a New York-based research firm, indicates that small businesses are shopping for new PCs, upgrades and even networks. Says the small businesses are also on MIS people, he alone as MIS departments, the move to LANs for small businesses means greater opportunities to sell value-added services, according to IDC/LINK.

Going SOHO

Derek Kevaghian, an authorized Hewlett-Packard dealer and a value-added computer reseller, works from home and targets

ads!

the growing SOHO market. The owner of Scarborough, Ont.-based Pinnegar Software Inc., a three-year-old business, Kensington has two employees, advertises in publications like *Toronto Computer*, and is running a "boomer" computer and networking sales, service and support business.

People who run their own businesses are their own marketing, accounting, purchasing, manufacturing, quality control, distribution,

included price (3.9 average ranking), the salesperson's ability to help (3.6), delivery (3.6), services such as set-up and installation (3.5), after-sales service (4.0), and, training (4.2).

The survey also shows retailers where value added opportunities are in the SOHO market. Those surveyed said they were willing to "pay a reasonable amount extra" for delivery (34 per cent), services such as set-up and installation (50 per cent), after sale services/troubleshooting (35 per cent), and training (25 per cent).

Manufacturers Think SOHO

All the major computer players acknowledge the existence of the home and small business market and are producing software and/or hardware aimed at this market. Just look at IBM, Microsoft, Bay and HP.

IBM Canada Ltd. offers a free Internet service to help Canadian small businesses evaluate their information technology requirements. "Many small business owners want to incorporate technology into their operations but often don't know where to start or are unsure of costs," said Heather Ross, national small business executive, IBM Canada.

After completing a questionnaire at the IBM Web site (<http://4.us.ibm.com/smallbusiness>), users receive a report on their technology requirements with suggested product solutions. Since opening its small business division last March, IBM Canada has launched the Small Business Solutions Centre, the Small Business Web site, and an online small business advisor.

Bay Inc. is also motivating its reseller channels to build pursue the small and medium-sized business market. To ensure resellers provide this market with appropriate solutions, IBM is creating special hardware and software bundles targeted at small and medium enterprises.

Microsoft Corp. provides "one box solutions" for home office businesses. Solutions include Microsoft Office 95, which enables SOHOs to integrate typical busi-

ness applications with the power of the Web. Home Essentials 98 consisting of Office and Money for financial management, Publisher 98 so entrepreneurs can create their own newsletters, fliers, brochures and Web sites, and the Microsoft Small Business Server — ideal for enhancing customer service, managing growth, and using the Internet to project their image to the world.

Bay Networks introduced Netware 4000 network access server, a multifunction platform that combines remote access and routing needs for small-to medium-sized enterprise networks. The modular platform design lets users purchase features they need while ensuring plenty of horsepower for easy migration to future network requirements.

Novell Inc.'s NetWare for Small Business 4.11 small business network solution now includes GroupWise 5.2 — a collaboration product for messaging, calendar and information management providing small companies with a collaboration network environment, dial-up Internet access, Web publishing and E-mail communications.

Like other multi-function products (MFP) on the market, HP's OfficeJet 635 colour printer/copier/scanner appeals to home and small office entrepreneurs because it offers a number of business functions in one space-saving, low-cost unit.

According to Evans Research Corp., a Toronto-based market research firm, a new wave of color-capable MFP shipments in Canada will experience an average annual growth rate of 33 per cent for the 1995-1999 period — much of that growth fuelled by the SOHO and small business market.

So where does all this leave resellers?

Well, there's no place like home. ■

Paul Lorne is a Toronto-based journalist who specializes in high technology reporting. He can be reached at pll@edirect.com.

ACCORDING TO IBM

Small and mid-sized businesses

• 100,000 businesses in the home office market, employing 10 per cent of the world's workforce, were responsible for 40 per cent of global IT spending, and made 60 per cent of Internet traffic.

SOHO buyers look for:

- Price
- The salesperson's ability to help
- Delivery
- Services such as set-up and installation
- After-sale service
- Training

human resources departments and IT departments. This can be overwhelming for a person running a new business who may lack advanced computer skills.

Instead of shopping at a superstore, SOHO entrepreneurs are more likely to rely on companies such as Pinnegar Software for a variety of value-added computer services, including building a computer system, installing software, getting the company on line, and troubleshooting hardware and software technical problems.

A recent survey of Canadian entrepreneurs published on the SOHO-CAN Internet mailing list revealed that SOHOs are very open to working with independent retailers or with resellers working from home. Of those surveyed, 78 per cent said they are "most likely to buy from" an independent retail outlet or a reseller working from a home office than from a big box retailer (three per cent) or on-line (10 per cent).

The entrepreneurs cited "reputation, honesty, value, customization and component quality" as factors that influence their decision when shopping for a computer reseller.

On a scale of 0 (not at all important) to 5 (extremely important), other factors that influenced their computer purchase decisions



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DVD Drives

Take care, they're not



all created equal!

By Steve McNelis and Jeff Krasnow

DVD, which stands for Digital Video Disc, Digital Versatile Disc, or nothing (depending on whom you ask!), is the next generation of optical disc storage technology. It's essentially a bigger, faster CD that can hold video as well as audio and computer data. DVD aims to encompass home entertainment and computers with a single digital format, eventually replacing audio CDs, videotape, laser discs, CD-ROMs, and perhaps even video game cartridges. DVD has widespread support from all major electronics corporations and significant computer hardware companies, plus about half of the major movie and music studios.

It's important to understand the difference between DVD-Video and DVD-ROM. DVD-Video (often simply called DVD) holds video programs and is played in a DVD player hooked up to a TV. DVD-ROM holds computer data and is read by a DVD-ROM drive hooked up to a computer. The difference is similar to that between Audio CD and CD-ROM.

DVD discs can be recorded one time (DVD-R) or many times (DVD-RAM). Most people expect DVD-ROM to be actually much more versatile than DVD-Video. Most new computers with DVD-ROM drives can also play DVD-Video.

The Big Deal

It's clear that DVD technology is evolutionary. It picks up right where CD technology leaves off. DVD drives will still play all your CD-ROMs, as well as audio and video CDs. In addition, these new drives will also read discs capable of carrying huge amounts of data. This vast part will alter and expand the way we think about digital data, information, and entertainment.

When put side by side, a DVD disc looks identical to a CD on the surface. They are both the same physical size but differ in density of storage. A single-sided, single-layer disc can contain 4.7GB of information. That's more than seven times the data a single CD can carry. A DVD disc can accommodate up to two layers of data on each side, so a double-sided double-layer disc can carry 17GB! That's enough for eight hours of movies or enough room to fit Wing Commander IV, PlayStation 2, The 11th Hour, and Hypoc in a single disc — with room to spare. This tremendous capacity will let software creators pack a lot more video, 3-D graphics, audio, interactivity, and quality onto a single disc and they'll be able to take entirely new approaches to creating entertainment titles geared for DVD's size.

Gearing Up For Speed!

DVD-ROM drive speeds don't compare with CD-ROM drive speeds. The new 1X DVD-ROM drives spin at the same speed as 1X CD-ROM drives, but because DVD data is packed much more densely, the transfer rates are much higher — equivalent to a 48X CD-ROM drive. Playing a CD on a DVD-ROM drive will only perform at the speed at which the disc is physically spinning. To address this, drives actually "shift gears" to up to 4X, 8X, or even 18X speed when you drop to a CD.

Decoder Card Required

DVD is much more than just more space. Included in the standard are specs for MPEG2 video — which delivers crisp, studio-quality 740-by-480 pixel images (compared with 320 by 240 from VHS tape), and Dolby AC3 audio, which delivers 5.1-channel, theater-quality surround sound in six different directions (five speakers plus a subwoofer). To reap these benefits, DVD requires not only a drive, but also a PCI audio video decoder card. If your customers are planning to upgrade their current PCs, make sure they have a slot to spare and that their systems can handle the demands of DVD. Some PC makers are using software to decode data, which is cheaper than buying a card, but software decoding needs as a minimum, a 233MHz Pentium to handle the task.

Upgrade Or Replace?

You should really offer DVD drives as standard equipment on higher-end machines.

Your customers will ask if they need to upgrade or replace their current system to add DVD. What they should be told is that they'll need at least a 133MHz Pentium running Windows 95. PCs upgraded from, for example, a 66MHz Pentium to a 133MHz Pentium using a chip such as Intel's QuadDrive processor are not suitable, since the PCI bus in earlier Pentium systems is likely to be too slow.

DVD Video

DVD has the capability to produce near-studio-quality video and better-than-CD-quality audio. DVD is vastly superior to videotape and generally better than laser disc. Note: since large amounts of video have already been encoded for Video CD using MPEG-1, a few low-budget DVDs will use that format (which is no better than VHS) instead of high-quality MPEG-2.

DVD video is compressed from digital studio master tapes in MPEG-2 format.

This "lossy" compression removes redundant data information

(such as areas of the picture that don't change) and information that's not readily perceptible by the human eye. The resulting video, especially when it is complex or changing quickly, may sometimes contain "artifacts" such as blockiness, fuzziness, and noise, more depending on the processing quality and amount of compression. At average rates of 3.5Mbps, compression artifacts may be occasionally noticeable. Higher data rates can result in better quality, with almost no perceptible difference from the original master at rates above 6Mbps. As MPEG compression technology improves, better quality is being achieved at lower rates.

Quality Queries

Some early DVD drives weren't very good, but this is not an indication that DVD quality is bad. Many drive discs were washed through the encoding process in order to be distributed as quickly as possible. Contrary to common opinion, and as stupid as it may seem, these drives are not carefully "tweaked" to show DVD at its best.

In-store demos should sometimes be viewed with a grain of salt, because often the TV set isn't properly adjusted. Most TVs have the sharpness set too high for the clarity of DVD. This exaggerates high-frequency noise and causes distortion, just as the table control when set too high for a CD causes it to sound harsh. DVD video has exceptional color fidelity, so usually or washed-out colors are almost always a problem in the display, not in the DVD player or disc.

DVD audio quality is excellent. One of DVD's audio formats is LPCM (linear pulse code modulation) with sampling rates and rates higher than audio CD. Alternatively, audio for most movies is stored as discrete multi-channel surround sound using Dolby Digital audio compression similar to the surround sound formats used in theaters. As with video, audio quality depends on how well the processing and encoding was done. In spite of compression, Dolby Digital is closer to CD quality.

Of course — the final measurement of DVD's quality and benefits will be in the hands of the consumer.

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Creative Labs PC-DVD Encore Dc2

The PC-DVD Encore Dc2 is a complete DVD solution. It features the DVD-ROM drive as well as a Dolby Digital AC-3 decoder board. The drive itself is a second-generation drive, offering read speeds of 20X in CD-ROM mode or 2X in DVD-ROM mode.

Creative's new Dc2 picture enhancement technology uses a line-doubling technique that enhances the already high-quality DVD resolution, offering better picture quality. Flicker-free images up to 60 frames per second, and dynamic zoom capabilities up to a resolution of 1,280 by 1,024. Bundled with the Encore package is Wing Commander IV from Electronic Arts, and Cine from Monolith Productions, each featuring Dolby Digital sound and MPEG-2 video.

The DVD-ROM drive is available on its own for an estimated \$209, or the entire bundle can be had for around \$199. Creative Labs' reputation just got a whole lot stronger with the addition of this impressive DVD kit to its line of multimedia products.

Diamond Multimedia Maximum DVD

From the makers of the popular Monster 3D series, this new DVD-ROM kit called Maximum DVD. It features a first-generation Toshiba DVD drive with a 288K buffer and maximum read speeds of 1X in CD-ROM mode and 1X in DVD mode.

The kit includes the DVD-ROM drive, an AC-3 decoder card and free DVD-ROM software. Although similar at first to the Creative kit, this package leaves a lot to be desired. The DVD drive, being a first-generation product, will only read at 1X speeds, and will not handle CD-R or CD-RW media. Toshiba has recently announced its second-generation DVD-ROM drive that will hopefully make for way into the Diamond package at the near future. The Maximum DVD kit from Diamond Multimedia sells for roughly \$399.

Hitachi GD-3000

Hitachi's latest DVD drive is a second-generation model that can act like a 20X CD-ROM or a 2X DVD-ROM drive. This drive is sold as a single unit, unlike the kits offered by Creative Labs and Diamond Multimedia. The user must purchase a separate Dolby AC-3 decoder board if that's desired.

If you customers are looking for a DVD unit simply to play DVD-ROM discs, this drive offers great performance and will handle CD-R and CD-RW discs as well. The bare drive sells for close to \$200 and comes with a one-year parts and labor warranty.

Pioneer DVD-L01

When it comes to audio/video components, Pioneer needs no introduction. Its latest additions to an extensive line of products are two new DVD-ROM drives. Although the drives themselves are identical in every way, the difference lies in the interface. Pioneer is offering users a choice of going with either the popular EIDE version of the drive, or for the power user, there is a SCSI-2 version. The drives each have a 512K buffer, read CD-ROM media at 20X speeds and DVD-ROMs at 1X. The only real drawback to these drives is the fact that they cannot read CD-R or CD-RW media. The EIDE version of this drive, which Pioneer believes will attract the most attention, sells for roughly \$245, while the SCSI-2 version is with for slightly more.

Sony DDU-100E

Sony's offering to the DVD-ROM market is this new drive known as the DDU-100E. The drive can be purchased either separately or in a kit. If the complete DVD kit is what you're after, Sony has a well-thought package that will see any user from beginner to advanced. The kit includes the DDU-100E drive which acts as an 8X CD-ROM or 1X DVD-ROM drive with a 512K buffer. It can even read CD-R media to ensure wider compatibility. The AC-3 card included with the bundle is the

popular REALmagic MPEG-2 card from Sigma Designs. To get your customer started right out of the box, Sony will include three DVD titles with the package. The drive alone is available for roughly \$200, while the entire DVD kit with AC-3 decoder is estimated at \$425.

Toshiba SD-M1102

From a leading developer of DVD technology comes a package that is very hard to resist. Toshiba's new DVD kit includes its second-generation DVD-ROM drive, known as the model SD-M1102. It offers 24X speeds with CD-ROM media and 2X using DVD discs. The drive has a 288K buffer and uses an EIDE interface. It also has some of the best access times in its class, as low as 105 ms for CD-ROM and 160 ms for DVD media. The drive is available on its own for roughly \$179, while the complete kit with AC-3 decoder and software sells for \$389.

Editor's Choice



Creative Labs

For a complete DVD multimedia package, it's hard to match Creative Labs' Encore Dc2. It has everything you need to enjoy DVD technology. From its high-performance drive to its AC-3 decoder, to its bundled software package. The presentation of the kit itself is also quite impressive, showing Creative Labs' attention to detail. If you want the best DVD bundle out there, this is the one to get. ■

Canadian Computer Wholesaler's Lab Test Editors can be reached at (416) 323-3404.

DVD Drives



	Hitachi GD-200	Diamond Multimedia Maximum DVD	Creative Labs PC-DVD Income Guard
Interface	IDE	IDE	IDE
AC-3 Decoder Board included	No	Yes	Yes
Buffer size	512KB	256KB	512KB
Max. DVD Capacity	17GB	17GB	17GB
Reads CD-R and CD-RW	Yes	No	Yes
Loading Mechanism	Tray	Tray	Bay
Read Speeds			
CD-ROM	30X	1X	24X
DVD-ROM	2X	1X	2X
Max Transfer Rates			
CD-ROM	3,000 KB/sec	1,300 KB/sec	3,000 KB/sec
DVD-ROM	2,700 KB/sec	1,350 KB/sec	2,700 KB/sec
Random Access Times			
CD-ROM	130 ms	130 ms	180 ms
DVD-ROM	270 ms	270 ms	170 ms
Contact	(800) 525-4100	(861) 307-2450	(610) 628-2202
Internet contact	www.hitachi.com	www.diamondmm.com	www.creative.com
Price of DVD Drive only	\$215	N/A	\$209
Price of DVD Kit	N/A	\$149	\$209
Warranty (if of your parts, Inboard)	1Y, 1L	9Y, 1L	1Y, 1L

	Pleasant DVD-A01	Seag SDU-100E	Toshiba SD-M1102
Interface	IDE or SCSI-2	IDE	IDE
AC-3 Decoder Board included	Yes	Yes	No
Buffer size	512KB	128KB	256KB
Max. DVD Capacity	17GB	17GB	17GB
Reads CD-R and CD-RW	No	Yes	Yes
Loading Mechanism	Tray	Tray	Tray
Read Speeds			
CD-ROM	30X	1X	24X
DVD-ROM	1X	1X	2X
Max Transfer Rates			
CD-ROM	1,300 KB/sec	1,300 KB/sec	2,400 KB/sec
DVD-ROM	1,350 KB/sec	1,350 KB/sec	2,700 KB/sec
Random Access Times			
CD-ROM	150 ms	160 ms	105 ms
DVD-ROM	200 ms	220 ms	200 ms
Contact	(118) 251-1533	(118) 486-7666	(800) 479-3580
Internet contact	www.pleasant-usa.com	www.seag.com	www.toshiba.com
Price of DVD Drive only	\$245	\$200	\$129
Price of DVD Kit	\$265	\$125	\$109
Warranty (if of your parts, Inboard)	1Y, 1L	1Y, 1L	1Y, 1L

Note: All prices shown are street prices, or estimated street prices

New Video Options For Win98, NT5

New graphics features in Windows 98 and Windows NT5 present unique opportunities.

by *Grover Bennett*



One of the more unique new features of Windows 98 is its support for multiple displays.

As many readers have discovered, high-performance video cards are attractive to many types of PC buyers: the graphics enthusiasts, game players, CAD and DTP buffs (and, of course, the people capturing and displaying digital video). Hopefully, this article will give you a perspective on building a demo system that will drive sales of secondary monitors and additional high-performance graphics cards.

Of course, high-performance video isn't just about 2D and/or 3D acceleration. You'll have to endure customer questions about whether AGP is worth having (for a dual-monitor system, the answer is very likely "yes," but for a system with a single video card, it does up a precious PCI slot and offers a modest performance boost.) Owners will want to know about the new Windows 98 (is it hot? See <http://www.hipbytes.com/papers/98> for a review of the new Creative Labs Graphics Blaster Video2 board), OpenGL, and Direct3D rendering rates and DVD.



DVD Drives

With the March release of an unbranded version of the DVD drive (personally sold as part of Creative Labs Encore Dual2 DVD kit), most customers are likely to skip CD-ROM drives entirely and jump to DVD — especially if they're unclear on the fact that the drive looks just like an IDE CD-ROM for Windows 98. Some dealers may find the lower cost of the Diamond DVD kit (\$299 versus \$389 or so for the Creative kit) offers a compelling alternative, with more software and a Toshiba mechanism for better Win98 compatibility.

We were delighted to see that the DVD drive is recognized by Windows 98's best floppy as a standard IDE device, which allowed our best floppy to access CDs as the

drive (and/or for installing a new OS). When reading CDs, the Encore drive behaves like a 28X CD-ROM. It was also able to read CD-RW, CD-R and, of course, DVD discs. We were, however, mildly disappointed to see that the pass-through cable that routes the output from a standard video card into and back out of the DVD decoder card seemed to produce a small amount of interference in our video display. It was barely visible, but definitely present. Moving the DVD controller card to a slot further away from our AGP graphics card didn't seem to solve the problem, but, happily, changing the video configuration options attenuated the interference. The unit was a breeze to set up and the movie playback performance was excellent.

The Encore DVD drive worked very well in our tests of the discs bundled with it. A well-known game called *Wing Commander 4*, starring Malcolm McDowell (Charles Bronson, George Lento Max) and Mark Hamill (Star Wars) is included, as is a custom 48-bit game of sword-bucking games called "Claw." Both make good in-store demos.

For sheer good performance, it's hard to beat a Permedia2-based video card such as the Leadtek L2300 or the Creative Labs Graphics Blaster Extreme (see the review at <http://www.hipbytes.com/papers/98>). The Permedia2 chip that powers these cards offers excellent overall performance and its hardware 3D acceleration is a full implementation of OpenGL, not just a mini-driver, such as those supplied by many "GLIDE" drivers.

If fleeing 3D performance is not as important as overall functionality, you might find the ATI All-in-Wonder Pro a strong contender. But be aware that the Rage Pro chip that powers the ATI card — even with the



Customer support in Windows 98 often PC installers are opportunities to change settings and high-quality movie video and audio. But beware the technical pitfalls.

new "Turbo" driver released on May 15 — doesn't compute in some of the areas many gamers deem most important: 3D rendering, solid OpenGL support and games performance. If video output and capture capabilities are important, the ATI All-in-Wonder Pro or the Creative Total DVD9 are good choices.

Indeed, an ATI card is a good pick if you wish to add a second video card and monitor, to take advantage of Windows

98's multi-display support. (The Creative Total3D 128V card isn't supported as a secondary display.) Also note: you may not have luck mixing AGP and PCI cards. At least in Windows 98 beta 3, we could not get the All-in-Wonder PCI card and the AGP-based Winmod card to co-exist reliably. (We could get them to work together as dual displays by deleting the Leadtek driver and reinstalling it. However, after a reboot, it would stop working again, despite the fact that Microsoft's Windows 98 release notes claim that the Permedia2 and All-in-Wonder are okay as primary and secondary graphics adapters, respectively.)

We did, however, have much better success when we configured two PCI adapters (a Permedia2-based Graphics Blaster Extreme and an All-in-Wonder Pro, in this case) for our dual displays. As the Win98 release notes state, not all video cards are supported as a secondary display.

Clearly, customers who elect to purchase Windows 98's multi-display option will have questions and technical issues. Be sure you understand the issues, so that you can help them put together a system that works.

For more information, see my Win98 report at <http://www.hipbytes.com/papers/98>.

Grover Bennett is the Editorial Director for Canada Computer Paper Inc. and a former computer retailer. He can be reached at grover@hipbytes.com.

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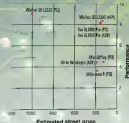
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J. Mol. Biol. 381 (2004) 103–112
doi:10.1016/j.jmb.2004.02.015

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25-34	25	15	35	15	35
35-44	35	25	45	25	45
45-54	45	35	55	35	55
55-64	55	45	65	45	65
65-74	65	55	75	55	75
75+	75	65	85	65	85

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Figure 1

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Windows 98

A step up, but modestly so

by Alex Zisman



Ready or not, here it comes.

Windows 98, that is. When Microsoft announced that the next-generation Windows 4.0 was going to carry the Windows 95 name, for many it seemed too reminiscent of the U.S. auto industry model changes. Some of the press promised exclusive coverage of Windows 96 and Windows 97, products that never were.

Since late 1996, for example, OEMs have been using OEM-Service Release 2 (aka Win95b) which included the FAT32 and Internet Explorers. Even that was updated to OEM-SR2.1 with Universal Serial Bus support, and OEM-SR2.5 with Internet Explorer 4.0.

At the same time, Microsoft was developing its next-generation product behind the scenes, and eventually came public enough to promise a replacement

for Windows 95. Early in 1998, Microsoft felt confident enough to offer Win98 Beta 3 for wider distribution to vendors and customers wanting to get a head-start on working with the upcoming release. By the end of February, the company sent out the first of a series of

potential Release Candidates to the 30,000 "official" beta test sites. Initial reports are that being an unforeseen problems (either with the software itself or with the U.S. Justice Department), Win98 seems pretty much ready.

An official release sometime in May is widely expected.

The fabled Microsoft hype machine, however, is running at a much lower pitch than in 1995. Partly, this is a response to the 1995 Windows launch. Despite spending an estimated US\$100 million, public response was only lukewarm. A Rolling Stones jingle and an athlete climbing Toronto's CN Tower

weren't enough when the public was really focused on the Internet.

Windows 95 sales were good, but two-and-a-half years later, an estimated 70 million users are still working with 1992's Win3.1.

I'm writing this, running Win98 Beta 3. It feels stable, fast, and ready for the general public. But if Windows 95 was really Windows 4.0, then isn't Windows 5.0 — think of it as Windows 4.1, A, real set of improvement over Win95, but still, a basically modest upgrade, more like the Windows 3.0 to 3.1 transition of the early 1990s than the more recent Win3.1 to Win95 transition.

While it installs happily over Win95 and Win3.1 systems, many current Win95 users really needn't bother upgrading. Purchasers of recent computers who already have CDR-AR2 may already be using the upgraded FAT32 file system for large hard disk support. If they've downloaded Microsoft Internet Explorer 4.0, they have most of the user interface changes

(and like me, may have turned off Active Desktop, and returned to the 'classic' Win 95 double-click interface). Users of earlier versions of Win95 may want to upgrade if they've added newer, large hard drives — just to get FAT32 along with the ability to convert to that file system without destroying their current setup.

Windows 98 isn't named as the existing user base, however. Its real sales will be to purchasers of new hardware.

Along with FAT32 support for large hard drives, Win98 includes built-in support for the whole collection of new hardware — all those three-letter acronyms that have had often-disappointing sales over the past year. There is support for:

- DVD drives, the next generation replacement for today's CD-ROM.
- AGP video overcoming the performance bottleneck on the PCI bus,



- Universal Serial Bus (USB) — promising easy connection of cameras, scanners, modems and speakers.
- FireWire (IEEE 1394) promising even higher performance than USB, aiming at video cameras, and 1,200 new drivers for modems, printers, and other hardware peripherals.
- Other improvements in areas like boot-up speed. On New Suspend mode, and power management require new system-level support. Expect best performance on systems with at least 256MB RAM — think of 32MB as the new standard for new systems.

There was support for USB, DVD, and the like prior to Win95, but it has tended to be patchwork, after-the-fact add-ons, often with disappointing performance. Having an operating system designed to support this generation of hardware will make it easier to bundle these devices into new computers, and should help with after-market sales and upgrades.

Some corporate sites are thinking of skipping Win98. They're planning to wait for an upcoming NT 5.0, due later in 1998 or early 1999, and offering much the same hardware support and interface, along with NT's security, stability, and network features. NT 5.0 will be able to use the same new drivers as Win98, and as a result, will benefit from a wider range of hardware support than earlier NT versions. Unlike Win98, however, NT 5.0 systems will not be able to use existing Win95 drivers.

Win98 continues to offer better backward-compatibility to DOS and Win 3.1 software and better support for game players. Win98 will be the operating system choice for most home and small business users.

Expect the upcoming release of Windows 98 to help jump-start sales, both of new consumer-oriented computer systems, and of a wide range of hardware devices. ■

Alex Zisman is a computer journalist and teacher, living in Vancouver. He can be reached at azisman@progerss.wave.ca

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from Newswire

Matsushita says slowed chips sales delay plant opening

Matsushita Electric Industrial Co., best-known for its Panasonic-branded products, says its decision not to open a new building at the plant in the U.S. is because of the declining market for memory chips, and not poor third-quarter earnings.

Although the firm has shown a recent post-third-quarter, it has also shown increased activity in DVD, video, high-parameter TV applications and, on the higher side, a refrigerator that lets you know if you leave the door

open or load it with too much food.

The firm's Japanese headquarters said it has agreed to license California-based Rambus Inc.'s high-bandwidth semiconductor-on-surface technology to speed data transfer between semiconductor chips.

The agreement with Rambus will allow MIEI and its subsidiary Matsushita Electronics Corp. (MEC) to develop products and distribute chips using the surface technology.

Hong Kong firms are targeted for software piracy

Acting on reports to its office, Hong Kong's Business Software Alliance (BSA) has issued High Court writs against 20 small and medium-sized businesses suspected of using illegal software.

Typically about suspected illegal software use have risen to more than 20 per month since Jan. 7, when the campaign was launched. With the expiration of the 45-day notice period given by the BSA, it said it was also identifying another 130 companies and would thoroughly investigate firms using pirated software.

"The BSA fully understands the unique constraints faced by the small and medium companies, which is why we gave them 45 days' notice to legalize their software," said Tom Robertson, BSA's vice-president. "The notice period is now up and those that have not taken the notice of software piracy seriously should face no illusion that the BSA will give them further time."

Among the companies served legal notices were Macintosh International Ltd., Uni Design Associates, BMG Bar East Ltd. and Penetration Freight Ltd.



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Nintendo to launch color Game Boy

Nintendo Co. Ltd. says it will begin sales of its first Game Boy hand-held video system with a color LCD screen later this year. The unit will be launched in Japan, Europe and North America.

Similar in size to existing units, Nintendo says the new Game Boys will include a new proprietary technology capable of displaying color graphics on a new type of color reflective screen. The system will allow for simultaneous display of up to 56 colors from a palette of 32,000.

An obstacle to production of color units in the past has been the limited on-battery life — something the new system overcomes, said the maker. "As the first to surpass the technical obstacles, we're able to introduce a whole new generation of color games to the millions of people who love Game Boy," said Howard Lincoln, chairman of Nintendo of America, in a statement.

Other new features include the ability to connect to a Nintendo 64 games system. Nintendo said the new Color Game Boy will be capable of playing cartridges from the existing monochrome unit. They will be displayed in one of ten color hues, selected by the user, the company said.

More details of the device will be announced later this year. Nintendo previously forecasted 1995 Game Boy sales at 9.5 million units, with software selling 25 million units.

The news follows the disclosure, one month ago, by Sony Computer Entertainment Inc. (SCEI) that it has developed a miniature-size "personal digital assistant" for use with its PlayStation video games console. The system is still under development and SCEI said it expects a commercial product to be available at the end of the year.

Thailand PC market will drop this year, says IDC study

The overall IT market for Thailand this year will drop by approximately 13 per cent in terms of unit shipments and the PC market will decrease by 38 per cent, compared to figures for last year, according to a study conducted by the International Data Corp. (IDC).

The market research company also said total PC market in 1997 amounted to 308,000 units, valued at US\$623.2 million. IDC predicts the PC market this year will be 190,000 units.

IDC Asia/Pacific vice-president and managing director Dennis Phillips said the negative growth in the IT industry was caused by the economic crisis in the region, which was affecting not only Thailand, but most ASEAN (Association of South East Asian Nations) countries, including Korea, and particularly Indonesia.

The survey by product categories in 1998 shows that the market is comprised of 99 per cent single-user systems and 13 per cent data communications equipment, with packaged software at 12 per cent, service at nine per cent and multi-user systems at seven per cent.

The study predicts that over five years (1997 to 2002) there will be a 3.8 per cent compound average growth in the PC market, with the multi-user market set to experience 5.6 per cent compound growth, and the workstation market to decline by 13 per cent.

The top five PC vendors, according to the IDC study, accounting for 53.2 per cent of the unit marketshare, are 58.8 per cent in shipment value, were Acer Corp., Digital, IBM and V Tech. The PC market comprises 91.27 per cent desktops, 6.36 per cent notebooks and 2.3 per cent PC servers.

Intel gets into Asian satellite services with new venture

Intel has jumped into the interactive digital service business in a joint venture with Hong Kong-based Pacific Century Group (PCG). The new company, Pacific Convergence Corp. (PCC), plans to deliver broadband services throughout the region via satellite.

When asked if PCC would encounter any difficulties with regulatory bodies such as the Office of the Telecommunications Authority (OFTA) in offering broadband services, Joseph Spitzer, senior vice-president with PCG, said the company would follow all government regulations in each country.

"Our services are somewhat of a unique formula for Asia. Part of it is based on delivery at high speeds, but we may also offer enhanced Internet, education, information, entertainment, or even electronic commerce," Spitzer said. He also added that the company would not be focusing on providing video or video services.

PCC holds 60 per cent interest in the company, with Intel holding the other 40 per cent. The company decided to reveal the initial capital investment.

Anne Lau, a spokeswoman for Intel, said that, although the company was exploring multimedia possibilities, PCC will not be competing with HongKong Telecom 165 or any other companies that would be offering broadband interactive services.

165 offers broadband services via 200,000 km of fibre-optic cable. PCC, in comparison, will be offering broadband capabilities over a future satellite network.

Sega Enterprises halts Saturn development

Sega Enterprises has announced a revised financial forecast for the current fiscal year on the back of heavy losses in the North American market. It also announced it would concentrate development work on a next-generation replacement for the Saturn console, effectively conceding defeat to Nintendo and Sony in the race of the video game war.

At its current level, Sega said sales are likely to be US\$2.1 billion, down 34.7 per cent from the previous year. Last year's net profit of US\$43.4 million is expected to become a net loss of US\$400.7 million. Sega had previously forecast a net profit of US\$116.8 million for the current year.

Within competition in the U.S. 32-bit game console market, where Sega's Saturn trails the Nintendo 64 and Sony PlayStation in sales in the loss, Sega said it will spend US\$581.8 billion in developing and distributing current titles.

The company said it will restructure its U.S. business to lay the groundwork for the launch of a next-generation console machine in 1999 and the start-up of the "first" network business.

NEC and Thomson Multimedia agree to jointly develop plasma display technology

NEC Corp. and Thomson Multimedia have signed a long-term agreement covering the joint development of plasma display technology. Thomson also announced plans to begin U.S. and European sales later this year of a consumer plasma display TV manufactured by NEC.

In a joint statement, the companies said the development will focus on enhancing the performance of the aluminium and panel technologies, such as reduced power consumption, improved brightness and picture quality, while accelerating the launch of new products and lowering cost significantly.

The two companies will continue their separate development of PDP technology but there will be some cooperation, under the agreement.

The two also announced that Thomson Multimedia will begin sales later this year of a consumer PDP television set based on NEC's 42-inch wide-screen PDP panel.

The set will be available in Europe, under the Thomson brand, and in the United States, under Thomson's RCA-Product brand name. ■

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Self-study book gives NT 4.0 education

by Stephen Barab

Title	Microsoft Windows NT 4.0 Network Administration Training
Publisher	Microsoft Press
ISBN	1-57231-489-7
Cost	\$174.00
Description	This book is a self-study guide equivalent to the \$200 Microsoft certified course #800, Administering Microsoft NT 4.0. The book provides the foundation skills to perform post-installation administration tasks in a single domain and multiple-domain network.
Other materials provided	A 120-day evaluation copy of NT Server 4.0 on CD and an excellent supplementary course CD with training and setup files, videos, and consultations.
Rating	A-



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Consider this problem:

• There are 30 print jobs already submitted to an RPS printer on the NT print server but the printing device is down. How do you persuade users to print without resubmitting their print jobs?

A chapter on printing describes how you can redirect the documents to another print device on the same or different server. Just go into the HP Printer Properties, clear the existing port and change to local port LPT2 that has another HP printer attached. Or, add a new local port in the Ports page, but type in the name of another print server and the share name of a print device. For example, in the Port Name dialog box enter `\\PrintServer\HP3440dev`. Print jobs originally spooled for printing to the local HP printer will now be redirected to the printer named HP3440dev, located on NT PrintServer2.

• What if your print server hard disk is slowing and printing is slowing down to a crawl?

Try going into the Printers folder and choose *(Printers Server Properties Advanced tab)* and change the location of the print spooler folder from its default of `C:\printers\server\Spoolers\server`. Or, if documents will not print and cannot be deleted from the printing window, then go into Control Panel, choose the Services icon, stop and restart the Spooler service.

• How to give users Full Control permissions over the D:\Public folder but there is a critical file that must not be deleted. You provide

No Access permissions to the file. File permissions always override directory or folder permissions rights. Unfortunately, you discover that the file is still being incidentally deleted.

The book describes how NT Point (Unix) compliance allows users with Full Control permissions on the folder to override No Access permissions on the file. To overcome this feature, assign to the folder the full control permissions that make up Full Control, such as Read, Write, Execute, and Delete. In this case, file permissions will override folder permissions.

• Your Primary Domain controller goes down. How can you use the Server Manager utility to promote a backup Domain controller to make its place?

You're sharing a directory over the network with specific NTFS (NT file system) permissions but user access is not as expected. When combining Share permissions with NTFS permissions, the most restrictive option is the final result. How can you forecast the results and what are all the implications?

PC users want to keep their desktop settings as custom which computers they use. You can implement "Roaming Profiles" to help them and keep your administrative work to a minimum. With the utility, User Manager for Domains, set up the profile `%userprofile%\ntuserenv\files\ntuserenv\files` from the Control Panel, choose System icon, User Profiles tab to delete, copy, and modify these profiles. It's easy to implement with this book.

Want to look out some Start menu choices, the Control Panel, and the Network Neighborhood? You can use the system policy editor to resolve these issues.

With its modular design, each lesson can stand on its own so you can complete them in any order, skip or repeat them. There are plenty of hands-on labs that demonstrate every concept and numerous illustrations. Plus, there are setup and cleanup batch files for every chapter to create and remove the users and groups necessary to complete the chapter lessons.

The suggested minimum computer configuration is a 486/33 with 16MB RAM, 128MB free hard disk space, 256-color SVGA, CD-ROM, sound card and speakers or headphones. Two networked computers are required to complete some of the exercises but this is considered optional. In my opinion, the minimum configuration is two 386/486-T networked Pentium 300MHz computers with at least 128MB RAM, a dedicated hard drive with 1GB of free hard disk space, and an SX CD-ROM.

TIP: After full installation, your drive should have a FAT16 and NTFS file system. Which one? The NT 4.0 supplied with the book doesn't use FAT32. Many Win95 installations use FAT32, so you have to reformat the system for FAT32.

Initially, use FDISK to create one MS-DOS FAT16 primary partition of about 400MB. The remainder of your disk can be an MS-DOS FAT16 extended partition. Format your primary partition or C: drive for MS-DOS. The extended partition can be further subdivided into logical drives and individually formatted.

When installing NT, you are given a disk format choice of MS-DOS FAT-based or NTFS. Leave your primary partition (C: drive) as FAT-based. This makes it easier to correct boot-up problems since all the NT startup files such as *NTLDR*, *BOOT.INI*, *NTDETECT.COM*, *BOOTSECT.DOS* are accessible from DOS. In fact, I recommend you create an NT startup floppy in case you have startup problems with your hard drive. Just format a floppy under NT so that it contains an NT boot record. Copy the four NT startup files from the C: drive to the floppy. You can use this floppy to start up your NT server. Also, remember to run RDISK (5 periodically to update your registry repair files and to create an updated Emergency Repair disk. The combination of an NT boot floppy plus Emergency Repair disk will allow you to get out of most problems.

Install NT into your C: drive, leaving the file system intact as DOS-based. Install another copy of NT into your extended partition (D: drive) but convert the file system to NTFS. You will be given this option at installation time or you can perform the step afterwards without losing data using the command-line *CONVERT D: /FS:NTFS /V*. However, you can't go backwards without losing data — you can't format for NTFS and then convert to FAT.

NT allows multiple OS installations. This will be reflected in the visible boot manager read-only system file — *C:\bootmgr*. When you start up NT, the system will display the contents of the boot as text file on the screen. You will be given the choices of two different NT installations and an MS-DOS selection. When you select NT, an NT boot record is placed into the partition boot sector. This boot record looks for the *C:\NTLDR* file to begin the NT startup process. The format DOS boot record becomes the new *C:\BOOTSECT.DOS* file. When you make the MS-DOS selection from the boot menu, the *bootmgr* file is loaded, which in turn loads the DOS system files.

NT can also co-exist on the hard drive with DOS, Win3.11, and Windows 95. Just install DOS first, Win3.11 next, followed by Win95 and then WinNT. Remember to keep each in its own directory. NT installs its own boot manager which allows you to boot from one of several installations of NT or from Win95. At startup time from Win95, press F4 to start DOS and Win3.11. To complete the sections on setting up access to resources through permissions, you need an NTFS formatted drive later. However, once you allocate a part of your hard drive to NTFS, nothing other than NT will be able to use it.

Complete set-up instructions are provided, but if you are new to NT, should expect to spend at least a weekend. NT can be picky about hardware, so check the Microsoft hardware compatibility list (HCL) before purchasing additional gear or at least do some thorough testing.

The included simulations are excellent — the best I've seen yet in comparison to other self-study guides. For example if you want to practice backing up a server but don't have a tape drive, you can run the included, "Backup Simulation." If you want to gain experience synchronizing multiple servers — then you can use the "Server Manager Simulation."

The disk-based videos provide only a basic foundation but they are very well done. Topics covered include Local and Global Groups, Overview of Directory Services and Permissions.

Just like the commercial course, the book is divided into 11 chapters covering topics such as:

- the differences between NT workstation and server, workgroups and domains,
- setting up and administering users and groups,
- securing resources using Share and NTFS permissions
- setting up and administering a network print server,
- auditing and monitoring resources and events, and,
- backing up and restoring files.

Are you planning to write the NT server and workstation certification exams? Then you will need to study additional courses. Microsoft Press publishes self-study guides that correspond to many of their commercial course offerings.

Is this book enough for managing an NT system on a day-to-day

This book covers exactly the same material as Microsoft's NT Administration course (#B03). Many of the exercises are the same. However, the book is considerably superior to the official student manual. It's better organized, flows more smoothly and is easier to read. In addition, there is added coverage and pointers not found in the course. In fact, Microsoft should bundle this book in their commercial course offering instead of their student kit.

believe? For most operations, yes, since it does have a solid foundation and it is a great tutorial. However, when administering an NT system, you want to know what's happening behind the scenes. For that, I recommend additional reference books such as the excellent Microsoft Windows NT Workstation 4.0 Resource Kit. The NT Server 4.0 Resource kit is also recommended but the Workstation reference is a better value and contains more useful information. DR

Stephen Berube, ISP, is co-converter of the computing program at Capilano College, which is CIPS, Novell and Microsoft certified. He can be reached at sberube@capcollege.bc.ca

How To Get Media Attention!

by Douglas Gray



News releases can be an extremely effective and inexpensive means of obtaining publicity — that is, if you do them correctly.

The secret is to create a media release that is newsworthy, interesting and topical. Keep in mind that reporters and newsmakers are constantly searching for material that could be of interest to their readers, listeners or viewers. Some days they may have little material, while other days they are packed with interesting news. If your timing is right, your release could be used as a "filler" on an otherwise light news day. When submitting releases, be certain to allow sufficient lead-time in order to enhance the likelihood of your release being used.

The term "media" refers to the communication vehicles of print such as newspapers and magazines, as well as radio and television. When deciding where to send a media release, do your research to target the correct persons within the media in question — whether publishers, general editors, section editors, journalists, reporters, freelance writers, syndicated columnists, book reviewers, news broadcasters, program directors, talk show hosts or researchers.

Here is an overview of the process of writing a news release.

Initial Steps To Take

The following resources may help you to locate the various media and best person in each category to send the release to:

- Look in the Yellow Pages under the headings "Radio," "Television," "Newspapers" and "Magazines." Also look at newstands to become aware of publications in your area of business interest.
- Check with your public library for Canadian Advertising and Rates Data (CARD), a directory listing all the media in Canada.
- Contact the media concerned and inquire about the name of the editor, talk show host, program director, news director, as well as address, postal code, fax or e-mail.
- Check the print media and gather names of

reporters, writers or columnists who write about subjects that could encompass your business area. And be aware of TV or radio news stories that you could "piggyback" on.

You may want to send the release to several key people within the same newspaper, radio, television or magazine organization. For example, you may believe the subject matter of your media release would be relevant not only to a newspaper's business section, but also its lifestyle section and its seniors' section. Usually each section has a separate editor — though a community newspaper that is published once or twice a week, for example, may just have a general editor.

Before you start preparing a release there are a number of initial steps you have to take. You have to ask yourself what benefit you hope to get from the exercise. Do you want local, regional, provincial or national publicity? It will obviously make a difference in terms of your media contacts and the content of the release. Do you want to generate a telephone, letter, fax or e-mail response from prospective clients or customers? Your objective could be to stimulate direct sales orders or walk-in traffic, for example. Or maybe you just want to make the public aware of your product so they will look for it in specialty or general retail stores.

The Pertinent Features Of A Good Media Release

To prepare a good release you should follow these general recommendations:

- Make it clear and easily readable.
- Use short sentences and simple English.
- Make sure it is grammatically correct with accurate spelling.
- Avoid flowery phrases, exaggerated or superlative statements and other hype. Remember this is a news release and not a sales letter.
- Use 1 1/2 inch margins all around and have it typed on white paper on your business letterhead, or on specially designed news release letterhead.
- Have a photocopied or printed, quality of reproduction is paramount in portraying a "professional" image.

- If referring to yourself in the release, which is a common technique, always use the third person: "he" or "she" rather than "I." This will make it sound like someone else has written about you, which is a desirable impression to create, and makes it easier to quote yourself. Readers tend to believe what they read as being credible and accurate because it appeared in print, and publicity legitimizes information, but this is undermined if the first person is used.

- Keep the release to one page ideally, and not more than two pages, or it might not be read. Keep in mind that the reader of the release is time-pressed and has to select from many releases received every day. If the release goes onto a second page, print "more" in the lower right-hand corner of the first page and attach a second page. Never print your release on both sides of the same sheet.

- You may wish to attach a separate biographical media release to your general release. The biography should read like an article and show why "the person being quoted" and your business are interesting. The more finished the appearance of your media release and/or biography, the more likely a busy reporter or editor will use it — in most cases verbatim or with very little editing.

- You may also wish to consider attaching a photograph (ideally, professionally taken) to your release depicting either yourself or the item being profiled. It should be black and white and have good resolution. If it does go into the newspaper or magazine, it will add a graphic impact and more human interest to the article.

If you don't want to do a release yourself, you can hire a freelance publicist who will help you design a media program that is right for you. You can locate names in the Yellow Pages of your phone book. ■

Douglas Gray, LL.B., formerly a practicing lawyer, is a Vancouver-based consultant speaker and author of 16 bestselling books including *The Complete Canadian Small Business Guide*, published by McGraw-Hill Ryerson.

new PRODUCTS

ViewSonic announces 15-inch multimedia ViewPanel

ViewSonic has announced a new flat panel display model — the VPA150, which can pivot from landscape (horizontal) mode to portrait (vertical) mode for the most effective display of data.

For example, when pivoted into its vertical mode, the VPA150 offers a display height equivalent to a 21-inch monitor. The VPA150 weighs 12.8 pounds, has a slim 6.3-inch depth, and low power consumption, electromagnetic emissions, and heat emission. The suggested retail price is \$3,349. Contact <http://www.viewsonic.com> or 1-800-888-3283.



ViewSonic

Motorola announces boards for computer telephony

Motorola Computer Group of Canada has announced the PPX600 and PPV5000, aimed at computer telephony system developers.

According to the company, the PPX600 chassis combines reliability, fault resistance and system capacity essential for mission-critical applications such as call centers, interactive voice response and voice message.

Logitech Cordless Desktop offers freedom from cord clutter

Logitech has begun to ship its latest Secureware Peripheral — the Cordless Desktop. This keyboard and mouse bundle allows users to connect with a PC via a radio frequency link, rather than traditional cables. The elimination of keyboard and mouse cables allows the user freedom to move both input devices to the most comfortable loca-



Logitech Cordless Desktop

Xerox Canada launches SOHO laser, DocuPrint P12

On March 9, Xerox Canada's Channels Group announced the Xerox DocuPrint P12, a 12 ppm monochrome personal laser aimed at the small office/home office (SOHO) market. According to Matthew Bailey, general manager of Canadian retail for Xerox Channels Group, "The DocuPrint P12 brings the high performance and first-rate print quality typically found in high-end production printers to the retail market at an affordable price. These benefits along with a three-year worry-free warranty make the DocuPrint P12 an outstanding value for the cost-conscious small-office office customer."

The DocuPrint P12 features 600 by 600 dpi resolution and Adobe PostScript technology, which allows fast printing of large and graphics-intensive documents. The P12 offers a host of special features, including quick return to application, watermarking, high quality halftone options, booklet, poster and envelope printing, and bi-directional status monitoring with audio prompts to inform the



Xerox DocuPrint P12

user of printer status. In addition to a standard 250-sheet paper tray and 80-sheet bypass feeder, there is an optional 500-sheet feeder, and an optional envelope cassette and face-up output tray.

The basic DocuPrint P12 also comes with an introductory promotion. PowerPack software bundle which includes McAfee VirusScan, Lotus Organizer 97 and BrotherDraw ClickArt. The suggested list price is \$1,199. For more information, see <http://www.xerox.com>.



ing. The PPV5000, an integrated pass-through PCI single board computer, delivers performance and high-capacity data throughput, says Motorola.

Single-unit pricing starts at US\$3,665 for the PPX600 and US\$1,395 for the PPV5000 single board computer.

See <http://www.motorola.com/computer>.

Kodak adds hi-res USB digital video camera

Kodak Canada Inc. has announced its second digital video camera, which supports the high speed Universal Serial Bus (USB) interface. The Kodak Digital Science DVC325 camera is able to capture both still images and full motion digital video sequences, enabling it to be used for both digital photography and desktop video/conferencing applications. The DVC325 comes with special compression software that allows it to offer full 30-frame-per-second video digitizing — twice the frame rate of the earlier DVC300 camera. The camera boasts a "Star Trek Phaser"-type design and, using the same image sensor technology as the NASA Mars Rover, can capture the highest quality images up to 640 by 480 pixels at 24-bit color. The USB connection allows high-speed transmission of images to the user's PC. The price of the DVC325, including MSN NetMeeting videoconferencing software, MetaCreations PowerGo, and many other software programs and utilities, is \$249. For further information, contact (416) 366-5233 or visit <http://www.kodak.ca>.



Kodak Digital Science DVC325

tion, and also reduces desktop clutter.

According to Denis Penland, Logitech product manager, "By removing cable clutter, the Cordless Desktop offers consumers total freedom to customize their workspace. Unlike wired alternatives, RF (radio frequency) means that both keyboard and mouse can address the receiver without requiring line-of-sight. This gives tremendous flexibility for spacing desktop items around to suit individual needs." The Cordless Desktop is offered at an affordable alternative to traditional PC keyboards and mice, priced at around \$130. According to Penland, many PC makers and resellers will be offering it as a value-add alternative to traditional keyboards and mice.

For more information, contact <http://www.logitech.com> or (510) 795-8500.

Network Associates launches CyberCop detection

Network Associates, formed by the merger of McAfee Associates and Network General, has announced the release of CyberCop, a network intrusion detection system that stops hackers before they steal or damage sensitive corporate information.

CyberCop provides a real-time "high tech burglar alarm" capable of alerting companies when the security of their computer

networks is breached.

The company says network administrators can install CyberCop and start detecting unauthorized activity in as little as 30 minutes.

The product sells for a list price of \$11,995 per sensor.

Contact the company at (905) 479-4100 or see <http://www.networkassociates.com>.

Compaq Canada introduces 14.5-inch flat-panel monitor

Compaq Canada Inc. has introduced the T17450 Flat Panel Monitor, priced at \$2,932, along with two 17-inch CRT monitors — the Compaq P75 Color Monitor and the Compaq V75 Color Monitor, priced at \$972 and \$823, respectively. Compaq says it expects to accelerate the transition of the standard size of business monitors from 15 inches to 17 inches.

See <http://www.compaq.ca>

HP adds remotely-managed Vectra VL computers

Hewlett-Packard (Canada) Ltd. has announced a new line of HP Vectra VL PCs that let multiple Vectra PCs be turned on and off remotely using LAN cards from major suppliers. HP says this allows customers to build manageable, networked HP Vectra PC environments using industry-standard networking components from vendors of their choice, including 3Com Intel and IBM.

The new PC family is currently available and starts at \$2,042. The company is at <http://www.hp.com>.

Franklin's REX PC Companion lands in Canadian market

Franklin Electronic Publishers Ltd. has announced the REX PC Companion in Canada. A unique portable information tool, the REX PC Companion is a credit-card sized device weighing about 60 grams (around 1.5 ounces), and equipped with a touch-sensitive LED display and built-in flash memory. It is designed to allow the user to store, view and modify vital business information, such as appointments, addresses, notes, phone numbers and "to-do" lists.

The software included with the REX allows for "download and go" transfer of files from a PC to the REX device. Formats supported include Symantec ACT!, Lotus Organizer 97, ASCII MS Scheduler, MS Outlook 97, and Starfish Schedule. The REX communicates with a PC by being plugged into a notebook's PC Card slot, or via an optional REX docking station that hooks up to a desktop PC's serial port.

Suggested retail price is \$219.99 for the standard card, and \$299.95 for the card with the serial port docking station.

For more information, contact (705) 321-1382 or <http://www.franklin.com>. ■

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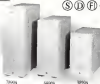
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Thomas Reeves

Beamscope Canada names president

Beamscope Canada Inc. has appointed Thomas Reeves as president.

He was previously president of Microtel Canada Inc. for 3.5 years. Earlier positions included managing director of Manul Europe, and consultant for the Boston Consulting Group.

Reeves has an undergraduate degree in Economics from Harvard University and a Masters of International Relations from the Australian National University.

Morry Chispek takes the role of co-chairman at Beamscope, and Larry Wasser continues as chairman and CEO.

Beamscope carries more than 6,500 products from manufacturers including IBM, Microsoft, Hewlett-Packard, Canon, Sony, Nintendo, 3-Com, Lexmark, Dvany Kodak and Echelon.

Apple adds vice-president

Apple Computer Inc. has appointed Timothy Cook as senior vice-president of worldwide operations.

Cook will be responsible for leading Apple's global operations organization, which handles worldwide procurement, supply chain management, manufacturing and distribution.

He joins Apple from Compaq, where he was vice-president of corporate materials, responsible for procuring and managing all of Compaq's product inventory. Cook also spent 12 years with IBM, most recently as director of North American Fulfillment, where he led manufacturing and distribution for IBM's Personal Computer Company in North and Latin America.

Cook earned an MBA from Duke University and a Bachelor of Science degree in Industrial Engineering from Auburn University.

Novell expands management

Markham, Ont.-based Novell Canada Ltd. has named Wally Hogen as director of major markets. He will direct business development and major enterprise sales initiatives, says the company, including those in the areas of corporate, government and vertical markets programs, according to the company.

Hogen had 17 years of management experience at IBM in sales, marketing, systems engineering, product management and industry business development. Most recently he was vice-president of Time Mirror Training Canada and general manager of Canadian operations for Learning International.



Wally Hogen

Ron Chevlier has joined Novell Canada as director of technology. He has more than 15 years of experience and was most recently vice-president, professional services at Stratus II, a systems integrator.

Okidata appoints GM

Mississauga, Ont.-based Okidata has named Lon Campbell as Canadian general manager.

He is responsible for establishing and executing the company's strategic mandate in Canada, including developing marketing, sales, service and support strategies, says Okidata.

Previously, he spent five years as president of Toronto-based AM International Inc. and three years as president of Nashua Canada Inc.

Mississauga, Ont.-based Okidata step place PC peripheral equipment, including serial receipt dot-matrix printers, ink-jet printers, LED page printers, and plain-paper multi-function products and facsimile machines. ■



Lon Campbell

Calendar

April 12-18

Computerworld (Marketing & Internet Post)
Mississauga, Ont.
Call: (416) 925-4533
Fax: (416) 925-7781
E-mail: caweb@earthlink.com

April 27-29 — Calgary

ITE, Gordon Management Consultants
Contact: Peter Dighton
http://www.peterdighton.com

May 10-15

canMedia/00
Toronto
Trade Show Admission
\$15 before April 24
Contact: Miriam Hines-Jackson
Contact: Multimedia Trade Shows Inc.
http://www.mtsa.ca

May 10-22

CSI EXPO
Toronto
http://www.csireg.ca

June 10-19 — Toronto

ITE, Problem Management Practitioner
Contact: Peter Dighton
http://www.peterdighton.com

July 8-10

Comdex/Canada
Toronto
http://www.comdex.com

Oct. 9-10

CCIM Annual Trade Show and Conference
Toronto
905-703-9000
http://www.ccim.ca
http://www.jrta.ca

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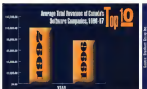
Nifty Numbers

Canada's Software Industry Still Strong, Despite Shifts

Report from Bramham

by Leslie Arnold and Margery Leach

Canada's software industry showed strong growth in 1997, in spite of disappointing results for some industry players.



Bramham Group Inc. recently published the *Bramham 200* profile of the Canadian software industry, which annually summarizes the performance of the top 100 independent

software Canadian companies in the *Financial Post* Magazine. The top 100 companies are ranked based on their annual revenues. This year's listing shows some significant shifts within the sector, but continues to demonstrate the lasting overall strength, in size, of our indigenous software industry.

Canada's industry managed to withstand some high-profile bankruptcies, and showed impressive growth nonetheless in 1997. For example, the top 100 software companies combined employ roughly 17,000 people worldwide. The industry shows a solid 35 per cent jump over the previous year's revenues, with the top 100 companies reporting combined revenues of more than \$2.5 billion.

The sector continues to be dominated by a few key players. According to this year's ranking, the top 10 companies are responsible for

62 per cent of the aggregate revenues generated by the top 100 companies. Furthermore, the top five companies alone account for almost half the total revenues! This has been a consistent and growing trend over the years.

To put these figures into some perspective, this year's top performer — Coac Computer Corp. Ltd. — generated almost \$190 million, while the company in 11th position — Hyperwave Ltd. — generated \$40 million, and the company in 100th position — 20M Technologies International Inc. — generated \$2.5 million. These statistics seem to characterize a young industry with a lot of growth ahead of it, but there are no guarantees. We will no doubt continue to see major shifts, and 1998 may indeed test the Canadian software industry's ability to stand the test of time. ☐

Leslie Arnold and Margery Leach are consultants at The Bramham Group Inc. in Ottawa (<http://www.bramham.ca>) — an international marketing and management consulting firm with a stated commitment to "Delivering Competitive Advantage in the IT Industry." Phone: (613) 743-2282, or fax: (613) 743-4990.

Reader Poll

Last issue, we asked:

Netscape Communications Corp. announced Communicator 4.04 is now available to users free of charge. Moreover, the source code for the next version of the software — Netscape Communicator Developer Edition 5.0 — will be made available to the Internet community. What impact will this have on Netscape's overall position in the market-place?

You said:

- 18%** Netscape's message should help the company keep its position as a solid leader in Internet browsers and Web technology.
- 58%** This helps Netscape's positioning against Microsoft's free Internet Explorer, but it remains to be seen what long-term effect the move will have.
- 23%** Netscape is in significant danger of losing its leading role in Web technology in Microsoft's opinion of this move.

This Issue:

There's a lot of activity these days in the handheld space. Apple unveiled its stopped development on the Newton OS. IBM has announced the next evolution of its handheld — the Palm III, and meanwhile Windows CE manufacturers have been busy rolling out the next generation of their products, often featuring color screens and bigger keyboards.

Our question to you:

When do you see us for most likely scenario a year from now?

- ☐ IBM's Palm device will be by far the leader in the category, in terms of revenue and unit sales.
- ☐ Windows CE handhelds will come into their own in the next year, and market acceptance will happen in a big way.
- ☐ Some other cost-effective handheld product will emerge and will be on its way to capturing the market.
- ☐ Handhelds will be a steady, insignificant market category.

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Sceptre's Dragon Eye series features the revolutionary ARIASG™ (Advanced Reflective/Static) coating. ARIASG™ is an advanced air-cure

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For instance, Sceptre takes an extra step in the manufacturing process and processes copper the CDS. We don't have to do it but that dedication shows in enhanced life

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